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Air Pollution Regulations in State Implementation Plans: California, San Francisco Bay Area APCD

Abcor, Inc, Wilmington, MA Walden Div

Prepared for

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Air Pollution Regulations in State Implementation Plans:

California

San Francisco
Bay Area APCD

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This document has been produced in compliance with Section 110(h)(1) of the Clean Air Act amendments of 1977. The Federally enforceable regulations contained in the State Implementation Plans (SIPs) have been compiled for all 56 States and territories (with the exception of the Northern Mariana Islands). They consist of both the Federally approved State and/or local air quality regulations as indicated in the Federal Register and the Federally promulgated regulations for the State, as indicated in the Federal Register. Regulations which fall into one of the above categories as of January 1, 1978, have been incorporated. As mandated by Congress, this document will be updated annually. State and/or local air quality regulations which have not been Federally approved as of January 1, 1978, are not included here; omission of these regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations.

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California
San Francisco Bay Area APCD

by

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EPA Project Officer: Bob Schell

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
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Research Triangle Park, North Carolina 27711

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Publication No. EPA-450/3-78-054-32

INTRODUCTION

This document has been produced in compliance with Section 110(h)(1) of the Clean Air Act Amendments of 1977. The Federally enforceable regulations contained in the State Implementation Plans (SIPs) have been compiled for all 56 States and territories (with the exception of the Northern Mariana Islands). They consist of both the Federally approved State and/or local air quality regulations as indicated in the Federal Register and the Federally promulgated regulations for the State, as indicated in the Federal Register. Regulations which fall into one of the above categories as of January 1, 1978, have been incorporated. As mandated by Congress, this document will be updated annually. State and/or local air quality regulations which have not been Federally approved as of January 1, 1978, are not included here; omission of these regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations.

There have been recent changes in the Federal enforceability of parking management regulations and indirect source regulations. The October, 1977, appropriation bill for EPA prohibited Federal enforcement of parking management regulations in the absence of specific Federal authorizing legislation. Federally promulgated parking management regulations have, therefore, been suspended indefinitely. Pursuant to the 1977 Clean Air Act Amendments, indirect source regulations may not be required for the approval of a given SIP. Consequently, any State adopted indirect source regulations may be suspended or revoked; State adopted indirect source regulations contained in an applicable SIP are Federally enforceable. More importantly, EPA may only promulgate indirect source review regulations which are specific to Federally funded, operated, or owned facilities or projects. Therefore, the Federally promulgated indirect source regulations appearing in this document are not enforceable by EPA except as they relate to Federal facilities.

Since State air quality regulations vary widely in their organization, content, and language, a standardized subject index is utilized in this document. Index listings consist of both contaminant and activity oriented categories to facilitate usage. For example, for regulations which apply to copper smelters, one might look under sulfur compounds (50.2), particulate matter process weight (50.1.1), or copper smelters (51.15). Federal regulations pertaining to a given State immediately follow the approved State and local regulations.

Additionally, a summary sheet of the information included in each comprehensive document is presented prior to the regulatory text to allow one to quickly assess the contents of the document. Specifically, the summary sheets contain the date of submittal to EPA of each revision to the SIP and the date of the Federal Register in which the revision was either approved or disapproved by EPA. Finally, a brief description or reference of the regulation which was submitted is also included.

This document is not intended to provide a tool for determining the enforceability of any given regulation. As stated above, it is intended to provide a comprehensive compilation of those regulations which are incorporated directly or by reference into Title 40, Part 52, of the Code of Federal Regulations. Consequently, the exclusion of a Federally approved regulation from this document does not diminish the enforceability of the regulation. Similarly, the inclusion of a given regulation (for example, regulations governing pollutants, such as odors, for which there is no national ambient air quality standards) in this document does not, in itself, render the regulation enforceable.

SUMMARY SHEET
OF
EPA-APPROVED REGULATION CHANGES
BAY AREA APCD

Submittal	Approval	Description
6/30/72	9/22/72	All Regs. Approved Unless Otherwise Specified
7/25/73	8/22/77	Reg. 1, Div. 1 Sec. 1000-1010, Div. 2 Sec. 2000, Div. 3 Sec. 3000-3004, 3100-3111, 3115-3118, 3120, 3200-3500, Div. 4, Reg. 4, Sec.1-2
11/2/73	8/22/77	Reg. 2, Div. 1 Sec. 1222, Div. 3 Sec. 3211, Div. 4 Sec. 4113, Div. 8 Sec. 8414-8416, Div. 9 Sec. 9613, 9615, 9711.3, 9711.5, Div. 11 Sec. 11101
7/19/74	5/11/77	Reg. 1 (1) Sec. 3112-3114, 3119, 3122
1/10/75	5/11/77	Reg. 2 (1) Sec. 2018, 1-2, Reg. 7, 8
4/10/75	7/26/77	Reg. 2, 1302.2, 1302.22
11/3/75	7/26/77	Reg. 2, 1302.21, 1302.23
2/10/76	5/11/77	Reg. 1, 3121; Reg. 6
8/2/76	5/11/77	Reg. 2 Sec. 2022.1-2022.2, 2035.1, 3211.1, Div. 16-18

DOCUMENTATION OF CURRENT EPA-APPROVED STATE AIR POLLUTION REGULATIONS

REVISED STANDARD SUBJECT INDEX

1.0 DEFINITIONS
2.0 GENERAL PROVISIONS AND ADMINISTRATIVE PROCEDURES
3.0 REGISTRATION CERTIFICATES, OPERATING PERMITS AND APPLICATIONS
4.0 AIR QUALITY STANDARDS (PRIMARY AND SECONDARY)
  4.1 PARTICULATES
  4.2 SULFUR DIOXIDE
  4.3 NITRIC OXIDES
  4.4 HYDROCARBONS
  4.5 CARBON MONOXIDE
  4.6 OXIDANTS
  4.7 OTHERS
5.0 VARIANCES
6.0 COMPLIANCE SCHEDULES
7.0 EQUIPMENT MALFUNCTION AND MAINTENANCE
8.0 EMERGENCY EPISODES
9.0 AIR QUALITY SURVEILLANCE AND SOURCE TESTING
10.0 NEW SOURCE PERFORMANCE STANDARDS
11.0 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS
12.0 MOTOR VEHICLE EMISSIONS AND CONTROLS
13.0 RECORD KEEPING AND REPORTING
14.0 PUBLIC AVAILABILITY OF DATA
15.0 LEGAL AUTHORITY AND ENFORCEMENT
16.0 HEARINGS, COMPLAINTS, AND INVESTIGATIONS
17.0 PREVENTION OF SIGNIFICANT DETERIORATION
18.0 AIR QUALITY MAINTENANCE AREA
19.0 - 49.0
RESERVED FOR FUTURE EXPANSION OF COMMON INDEX
50.0 POLLUTANT - SPECIFIC REGULATIONS
  50.1 PARTICULATES
    50.1.1 PROCESS WEIGHT
    50.1.2 VISIBLE EMISSIONS
    50.1.3 GENERAL

- 50.2 SULFUR COMPOUNDS
- 50.3 NITRIC OXIDES
- 50.4 HYDROCARBONS
- 50.5 CARBON MONOXIDE
- 50.6 ODOROUS POLLUTANTS
- 50.7 OTHERS (Pb, Hg, etc.)

51.0 SOURCE CATEGORY SPECIFIC REGULATIONS
- 51.1 AGRICULTURAL PROCESSES (includes Grain Handling, Orchard Heaters, Rice and Soybean Facilities, Related Topics)
- 51.2 COAL OPERATIONS (includes Cleaning, Preparation, Coal Refuse Disposal Areas, Coke Ovens, Charcoal Kilns, Related Topics)
- 51.3 CONSTRUCTION (includes Cement Plants, Materials Handling, Topics Related to Construction Industry)
- 51.4 FERROUS FOUNDRIES (includes Blast Furnaces, Related Topics)
- 51.5 FUEL BURNING EQUIPMENT (coal, natural gas, oil) - Particulates (includes Fuel Content and Other Related Topics)
- 51.6 FUEL BURNING EQUIPMENT (coal, natural gas, oil) - SO_2 (includes Fuel Content and Other Related Topics)
- 51.7 FUEL BURNING EQUIPMENT (oil, natural gas, coal) - NO_2 (includes Fuel Content and Other Related Topics)
- 51.8 HOT MIX ASPHALT PLANTS
- 51.9 INCINERATION
- 51.10 NITRIC ACID PLANTS
- 51.11 NON-FERROUS SMELTERS (Zn, Cu, etc.) - Sulfur Dioxide
- 51.12 NUCLEAR ENERGY FACILITIES (includes Related Topic)
- 51.13 OPEN BURNING (includes Forest Management, Forest Fire, Fire Fighting Practice, Agricultural Burning and Related Topics)
- 51.14 PAPER PULP; WOOD PULP AND KRAFT MILLS (includes Related Topics)
- 51.15 PETROLEUM REFINERIES
- 51.16 PETROLEUM STORAGE (includes Loading, Unloading, Handling and Related Topics)
- 51.17 SECONDARY METAL OPERATIONS (includes Aluminum, Steel and Related Topics)
- 51.18 SULFURIC ACID PLANTS
- 51.19 SULFURIC RECOVERY OPERATIONS
- 51.20 WOOD WASTE BURNERS
- 51.21 MISCELLANEOUS TOPICS

TABLE OF CONTENTS

BAY AREA APCD REGULATIONS

Revised Standard Subject Index	Section Number	Title	Page
-	Regulation 1	-	1
(1.0)	1000	Definitions	1
(2.0)	2000	General Prohibition	2
(2.0)	3000	Exceptions	2
(2.0)	4000	Disclaimer	6
-	Regulation 2	-	7
(2.0)	Division 1	Scope	7
(2.0)	Chapter 1	Application of this Regulation	7
(2.0)	Chapter 2	Exclusions from Application of this Regulation	8
(1.0)	Division 2	Definitions	10
(2.0)	Division 3	General Limitations and Requirements	14
(2.0)	Chapter 1	General Limitations	14
(2.0)	Chapter 2	General Requirements	20
(51.9)	Division 4	Incineration and Salvage Operations	23
(2.0)	Chapter 1	Limitations	23
(2.0)	Chapter 2	Requirements	25
(2.0)	Chapter 3	Exceptions	25
(51.21)	Division 5	Heat Transfer Operations	26
(2.0)	Chapter 1	Limitations	26

Revised Standard Subject Index	Section Number	Title	Page
(2.0)	Chapter 2	Requirements	27
(51.21)	Division 6	General Combustion and General Operations	27
(2.0)	Chapter 1	Limitations	27
(2.0)	Chapter 2	Exceptions	31
(2.0)	Division 7	General Provisions	32
(6.0)	Chapter 1	Time for Compliance	32
(2.0)	Chapter 2	General	32
(9.0)	Division 8	Calculation Methods and General Sampling Procedures	33
(9.0)	Chapter 1	Calculations	33
(9.0)	Chapter 2	Standard Gas Sampling Procedures for Vents and Stacks	36
(9.0)	Chapter 3	Particulate Matter Sampling Procedures for Vents and Stacks	38
(9.0)	Chapter 4	Area-Monitoring of Sulfur Dioxide Gases	39
(9.0)	Chapter 5	Specifications for Testing of Incineration Operations and Salvage Operations	39
(9.0)(6.0)	Chapter 6	Procedure for Making Observations to Determine Compliance with 3110	40
(9.0)	Chapter 7	Determination of the Concentration of Particulate Matter for the Purposes of 3113	40
(9.0)	Chapter 8	Area Monitoring of Hydrogen Sulfide Gas	41
(9.0)	Division 9	Analytical Procedures	42

Revised Standard Subject Index	Section Number	Title	Page
(9.0)	Chapter 1	Determination of Total Sulfur Oxides in Samples Taken from Gas Streams	42
(9.0)	Chapter 2	Chemical Procedure for Atmospheric Determinations of Sulfur Dioxide	43
(9.0)	Chapter 3	Determination of Sulfur Trioxide in Samples Taken from Gas Streams	44
(9.0)	Chapter 4	Specifications for the Gas Chromatograph to be Used for Determining Hydrocarbon Concentrations in 4113 Chapter 1, Division 4	46
(9.0)	Chapter 5	Determination of Total Carbonyls	47
(9.0)	Chapter 6	Determination of Hydrogen Sulfide in Samples Taken from Gas Streams	50
(9.0)	Chapter 7	Determination of Hydrogen Sulfide in Atmospheric Samples	51
(2.0)	Division 10	New and Expanded Operations	53
(1.0)	Chapter 1	Definitions	53
(2.0)	Chapter 2	New Limitations - General Limitations and Requirements	53
(51.9)	Chapter 3	Incineration and Salvage Operations	53
(51.21)	Chapter 4	Heat Transfer Operations	53
(51.21)	Chapter 5	General Combustion and General Operations	54
(50.2)	Division 11	Hydrogen Sulfide	54
(50.7)	Division 12	Lead Regulation	56

Revised Standard Subject Index	Section Number	Title	Page
(2.0)	Chapter 1	General Limitations	56
(3.0)	Division 13	Permits	59
(50.3)	Division 14	Nitrogen Oxides	70
(50.2)	Division 16	Sulfur Content of Fuel	74
(51.21)	Division 17	Reduction of Animal Matter	74
(51.8)	Division 18	Asphalt Air Blowing	75
-	Regulation 3	-	76
(2.0)	Division 1	Scope	76
(2.0)	Chapter 1	Application of This Regulation	76
(2.0)	Chapter 2	Exclusions From Application of This Regulation	76
(1.0)	Division 2	Definitions	78
(2.0)	Division 3	General Limitations and Requirements	83
(2.0)	Chapter 1	General Limitations	84
(2.0)	Chapter 2	General Requirements	86
(9.0)(7.0)	Chapter 3	Excepted Source Operations To Conform To Modern Maintenance and Operating Procedures	88
(2.0)	Division 4	General Provisions	92
(6.0)	Chapter 1	Time for Compliance	92
(2.0)	Chapter 2	General	92
(9.0)	Division 5	Calculation Methods and General Sampling Procedures	94
(9.0)	Chapter 1	Calculations	94

Revised Standard Subject Index	Section Number	Title	Page
(9.0)	Chapter 2	Standard Gas Sampling Procedures for Organic Compounds In Vents and Stacks	94
(9.0)	Chapter 3	Sampling Devices for Specific Organic Compound Emissions	97
(9.0)	Division 6	Analytical Procedures	97
(2.0)	Chapter 1	General Outline	97
(9.0)	Chapter 2	Determination of Total Organic Gases in Samples Taken from Effluents	98
(9.0)(50.4)	Chapter 3	Determination of Olefins and Substituted Aromatics in Effluents	98
(9.0)(50.4)	Chapter 4	Procedure for Determining the Percent Olegins and Substituted Aromatics in Organic Liquids Containing No Oxygenated Organic Compounds	100
(9.0)(50.4)	Chapter 5	Determination of Total Carbonyls	101
(9.0)	Chapter 6	Use of A Portable Combustible Gas Indicator for Preliminary Estimation of the Concentration of Organic Gases in Effluents	103
(9.0)	Chapter 7	Procedure for Determining Head Space Reactivity in the Absence of Oxygenated Organic Compounds	105
(9.0)(50.4)	Chapter 8	Procedure for Determining Olegins and Substituted Aromatics in Organic Liquids and for Determining Head Space Reactivity in the Presence of Oxygenated Organic Compounds	106

Revised Standard Subject Index	Section Number	Title	Page
(9.0)(50.4)	Chapter 9	Procedure for Determining the Percent Aldehydes in Organic Liquids	107
(9.0)	Chapter 10	Test for Oxygenated Organic Compounds in Organic Liquids	107
(9.0)(50.4)	Chapter 11	Test for Olegins In Organic Liquids	108
(9.0)(50.4)	Chapter 12	Determination of Volume Percent Reactive Organic Compounds in Paint, Varnish, Lacquer or Other Surface-Covering Materials and Solvents	108
(9.0)	Chapter 13	Test To Determine Percent Reduction of Reactive Organic Gas Emissions by an Abatement Device	109
(2.0)	Regulation 4	-	112
(2.0)	Regulation 6	-	112
(10.0)	Regulation 7	New Source Performance Standards	112
(1.0)	-	Definitions	112
(2.0)	Rule 1	General Provisions New Source Peformance Standards	114
(51.5)(51.6)(51.7)	Rule 2	Standards of Performance for Fossil Fuel-Fired Steam Generators	116
(51.9)	Rule 3	Standard of Performance for Incinerators	120
(51.3)	Rule 4	Standards of Performance for Portland Cement Plants	121
(51.10)	Rule 5	Standard of Performance for Nitric Acid Plants	122

Revised Standard Subject Index	Section Number	Title	Page
(51.18)	Rule 6	Standard of Performance for Sulfuric Acid Plants	124
(51.8)	Rule 7	Standard of Performance for Asphalt Concrete Plants	125
(51.15)	Rule 8	Standard of Performance for Petroleum Refineries	126
(51.16)	Rule 9	Standard of Performance for Storage Vessels for Petroleum Liquids	132
(51.17)	Rule 10	Standard of Performance for Secondary Lead Smelters	134
(51.17)	Rule 11	Standard of Performance for Secondary Brass and Bronze Ingot Production Plants	136
(51.4)	Rule 12	Standard of Performance for Iron and Steel Plants	137
(51.9)	Rule 13	Standard of Performance for Sewage Treatment Plants	138
(11.0)	Regulation 8	Emission Standards for Hazardous Pollutants	139
(1.0)	-	Definitions	139
(2.0)	Rule 1	NESHAPS General Provisions	141
(51.21)	Rule 2	Emission Standard for Asbestos	141
(50.7)	Rule 3	Emission Standard for Beryllium	147
(51.21)	Rule 4	Emission Standard for Beryllium Rocket Motor Firing	151

REGULATION 1

A REGULATION OF THE BAY AREA AIR POLLUTION CONTROL DISTRICT REGULATING THE PRACTICE OF BURNING OF COMBUSTIBLES IN THE OPEN IN THE BAY AREA AIR POLLUTION CONTROL DISTRICT.

The Board of Directors of the Bay Area Air Pollution Control District does enact as follows:

(1.0) 1000 DEFINITIONS: The definition of terms and words set forth in this Regulation are applicable whenever the defined term or word is used in this Regulation.

1001 "Agricultural Fire". Means fire used for the purpose of initiating, continuing or maintaining agriculture as a gainful occupation. Fuels are limited to materials grown on site and are not to include feed or fertilizer containers; finished lumber, plastic or rubber products; plumage, hides, fur, offal or fecal material or refuse from plant or animal processing other than from initial crop harvesting, pruning or attrition of forest, fruit and nut trees, vines and cane crops.

1002 "Certify". Means to submit documentary evidence of a decision.

1003 "Consultation". Means the active participation by written referral and/or joint examination by the permit-writing agency and the Air Pollution Control Officer (or his delegated agent) in making the decision to issue or to refuse issue of a permit. Both agencies retain the prerogative to withhold permission to burn.

1004 "District". Means the Bay Area Air Pollution Control District.

1005 "Fire". Means any combustion of combustible materials of any type outdoors in the open, not in any enclosure, where the products of combustion are not directed through a flue.

1006 "Flue". Means any duct or passage for air, gases, or the like, such as a stack or chimney.

1007 "Gainful Occupation". Means any occupation from which there is proof of gross profit as evidenced by tax receipts, sales slips, or other such documents.

1008 "Notice". Means the verbal or documentary notification of intent to use open fire under the provisions of this Regulation. If verbal notice is given, there must be a written confirmation of this action sent to the designee within five days.

1009 "Permissive Burn-Day". Means any day that is so declared by the Air Pollution Control Officer when in his opinion, air pollution caused by open burning may be minimized. In declaring such permissive burn-days, the meteorological criteria established by the Air Resources Board for the San Francisco Bay Area Basin shall be used as a guideline.

1010 "Treated Brush". Means the material to be burned has been felled, crushed, or uprooted with mechanical equipment, or has been desicated with herbicide.

(2.0) 2000 GENERAL PROHIBITION. No person, firm, corporation, association, or public agency shall ignite, cause to be ignited, permit to be ignited, or suffer, allow, or maintain any open outdoor fire within the District, except as provided in this Regulation.

(2.0) 3000 EXCEPTIONS. Fires set, used or maintained for the following purposes are excepted from the prohibitions of Section 2000.

3001 Cooking and Recreation. Fires used only for cooking of food for human beings. Fires used for recreational purposes, using only clean dry wood or charcoal, and a small amount of fire-starter.

3002 Safety Flares. Fires burning as safety flares or for the combustion of waste gases.

3003 Flame Cultivation. The use of flame cultivation when the burning is performed with LPG or natural gas-fired burners designed and used to kill seedling grass and weeds in orchards, vineyards and field crops and the growth is such that the combustion will not continue without the burner.

3004 Clean Fires. Any fire, if it can be demonstrated that nothing but carbon dioxide, nitrogen oxides, or water vapor is emitted under all operating conditions.

3100 CONDITIONAL EXCEPTIONS. No burning shall take place within the District on other than a permissive burn-day or without the permission of the Air Pollution Control Officer except under those conditions specified under Section 3300. The following special conditions shall become a term of the permit regulating fire allowed by the following subsections unless specifically exempted in that subsection and shall be complied with during any burning permitted under those subsections.

.1 No burning before 8:00 a.m., local time.

.2 No additional material or fuel shall be ignited nor shall any material or fuel be added to any fire after two hours before sunset;

.3 No material or fuel shall be ignited nor shall any material or fuel be added to any fire when the wind velocity is less than five (5) miles per hour, or when the wind direction at the site shall be such that the direction of smoke drift shall be other than away from populated areas in order to minimize local nuisance caused by smoke and particulate fallout.

.4 All piled material shall have dried for a minimum of 60 days prior to ignition or demonstrated to contain less than 23% moisture on a dry basis.

.5 Material to be burned shall not contain more than 5% native soil on a weight basis.

.6 Piled material shall be limited to a base area not to exceed 25 square yards and the height shall be at least 2/3 of the average width of the pile.

.7 Ignition material shall be limited to those listed by the State Forester (i.e., orchard torches, drip torches, pressurized diesel torches, propane or LPG torches, commercial petroleum gel materials (napalm, blivets) pressurized or solid, commercial safety fuse, commercial type ignition grenades (Fenner etc.), fuses, commercial fuse lighters, matches); all fires shall be ignited so as to burn as rapidly as possible within conditions of safety and minimum pollution.

.8 Ignition must be initiated from the top of the piled material, and no additional material except those described under 3100.7 shall be added to the fire.

.9 Tonnage of material burned on any given day and/or at any specified site is subject to limitations set by the Air Pollution Control Officer, but may not exceed any limits set by the California Air Resources Board.

3110 Disease and Pest. Agricultural fires set by or permitted by the County Agricultural Commissioner of the County, if such fire is set of permission given in the performance of the official duty of such County Agricultural Commissioner for the purpose of disease and pest prevention. Although permission of the Air Pollution Control Officer is not required for this Section, notice is required.

3111 Hazardous Material. Any fire set or permitted by any public officer, in the performance of official duty, if such fire is set or permission given for the purpose of the prevention of fire hazard including the disposal of dangerous materials, which fire is, in the opinion of such official necessary.

3112 Fire Training. Fires set for the instruction of either public or industrial employees in fire fighting methods when certified necessary by the public officer having jurisdiction. Notwithstanding contrary provisions of Section 3100, each fire fighting agency may set one fire for the purpose of training volunteer fire fighters per quarter year on other than a permissive burn day if the Air Pollution Control Officer is notified at least two weeks in advance.

3113 Crop Replacement. Agricultural fires set or permitted by the public officer having jurisdiction in the performance of official duty, necessary to establish an agricultural crop in a location which formerly contained another type of agricultural crop or natural growth, during a period between October 1 and April 30.

3114 Orchard Pruning and Attrition. Agricultural fires set or permitted by the public officer having jurisdiction in the performance of official duty, necessary to maintain and continue the growing of fruit and nut trees, vineyards and cane fruits, as a gainful occupation, for the purpose of disposal of periodic prunings and attrition losses from fruit and nut trees, vineyards and cane fruits, during a period beginning December 1 and ending April 30.

3115 Double Cropping Stubble. Agricultural fires set or permitted by a fire official having jurisdiction, in the performance of official duty, for the purpose of disposal of grain stubble from agricultural operations on which both grain and vegetable crops are harvested during the same calendar year and on which it is necessary to remove the grain stubble and straw before planting a field vegetable crop, during a period beginning June 1 and ending August 31.

3116 Stubble. Agricultural fires set or permitted by a fire official having jurisdiction, in the performance of official duty, necessary to maintain and continue the growing of field crops as a gainful occupation, for the purpose of disposal of stubble and straw, during a period beginning September 1 and ending December 31.

3117 Irrigation Ditches. Fires set or permitted by a fire official having jurisdiction, in the performance of official duty, necessary to control the growth of vegetation in irrigation ditches and canals.

3118 Flood Control. Fires set or permitted by a public official in charge of flood control activities for the purpose of disposal of material which is lying or growing within natural channels or flood control channels which fires are, in the opinion of such official, a necessary incident to the clearing and maintenance of water courses and flood control channels for the specific purpose of preventing or eliminating a flood hazard.

3119 Range Management. Fires set or permitted by the State Forester or fire official, necessary to maintain and continue the grazing of animals as a gainful occupation for the purpose of range improvement and grazing, during a period between July 1 and April 30. Brush to be burned shall be treated at least six months prior to burn if determined to be technically feasible by the State Forester or fire official. Unwanted trees over six inches in diameter shall be felled prior to burn and dried for a minimum of six months. Feasibility shall be subject to consultation with the Air Pollution Control Officer. Sections 3100.1 and 3100.6 may be waivered by the State Forester or fire official when determined necessary in the public interest. Beneficial use permits for Game and Wildlife habitat improvement must be certified by the Department of Fish and Game.

3120 Forest Management. Fires set or permitted by a fire official having jurisdiction in the performance of fire duty necessary to remove forest debris and for forest management purposes during a period between November 1 and April 30. Section 3100.1 and 3100.6 may be waived by the State Forester when he deems such action necessary in the public interest. All material shall be piled or windrowed unless deemed poor cultural practice by the State Forester.

3121 Wildlife Management. Fires certified by the State of California Department of Fish and Game to be necessary for the improvement of lowland and marsh for wildlife and game habitat, during a period beginning March 1 and ending April 30, and a period beginning September 15 and ending October 15. No such fire may be permitted on a given piece of land more than once in any two year period. The Department of Fish and Game shall provide the Air Pollution Control Officer such information as may be deemed necessary by the Air Pollution Control Officer.

3122 Flood Debris. Fires set or permitted by the public officer having jurisdiction in the performance of official duty necessary to remove wood and vegetation debris deposited by flood waters, for the purpose of continuing or maintaining agriculture as a gainful occupation, during a period between October 1 and May 31.

3200 INFORMATION REQUIRED. Each permittee shall provide the Air Pollution Control Officer with a report of the location of the fire, the type of material burned and the quantity of material consumed, within 10 days following each fire so that information as required by the Air Resources Board may be forwarded.

3300 EMERGENCY WAIVERS. A Public Officer authorized under Sections 3110, 3111 and 3118 to grant permits for open burning may grant waivers from Section 3100 (3100 through 3100.9), when in his judgement, such emergency or summary action is necessary for the public safety. When such action is taken, the authorizing authority shall certify the following in a report: the name and address of the permittee, the site and date of burning, a description and quantity of the material burned and an explanation for his actions shall be submitted to the Air Pollution Control Officer within 10 days following the burning so that these facts may be forwarded to the Air Resources Board.

3400 AGRICULTURAL LAND USE. Debris from land clearing shall not qualify under Sections 3110, 3113, 3114, 3115, or 3116 unless permittee certifies, under penalty of perjury, that said land is to remain in agricultural use for a gainful occupation and that permittee has not caused or contributed to the need for the burning of the material for any reason other than the promotion of agricultural use of the land for a gainful occupation. However, the County Agricultural Commissioner may waive this Section by certifying that burning of the material under Section 3110 is, in his opinion, the only safe method of disposal. Failure to comply with the conditions of the Section shall be considered a violation of the Regulation. Each pile burned in violation shall be cited as a separate offense.

3500 PENALTY. Violation of this Regulation is a misdemeanor under the California Health and Safety Code Section 29361.5 and is punishable by a fine of not more than $500 or six (6) months imprisonment or both.

(2.0) 4000 DISCLAIMER. Nothing in this Regulation is intended to permit any practice which is a violation of any statute, ordinance, rule or regulation.

REGULATION 2

A REGULATION OF THE BAY AREA AIR POLLUTION CONTROL DISTRICT REGULATING EMISSIONS OF CERTAIN AIR CONTAMINANTS[1] FROM INCINERATION[2], SALVAGE, HEAT TRANSFER, GENERAL COMBUSTION, AND GENERAL OPERATIONS

The Board of Directors of the Bay Area Air Pollution Control District does enact as follows:

(2.0) DIVISION 1 - SCOPE

(2.0) CHAPTER 1 - APPLICATION OF THIS REGULATION

1110 This Regulation shall apply, except as excluded in Chapter 2, Division 1, to emission of the air contaminants listed in 1111 from the operations defined in this section 1110; and to the registration of each person responsible for emissions of air contaminants, whether or not limits are established by this Regulation for emission of such contaminants.

.1 Incineration Operation means any source operation in which combustion is carried on for the principal purpose, or with the principal result, of oxidizing a waste material to reduce its bulk or facilitate disposal or both of such.

.2 Salvage Operation means any source operation in which combustion is carried on for the principal purpose, or with the principal result, of salvaging metals which are introduced into the operation as essentially pure metals, or alloys thereof, by oxidation of physically intermingled combustible material; but excludes operations in which there is complete fusion of all such metals.

.3 Heat Transfer Operation means the combustion side of any source operation which (a) involves the combustion of fuel for the principal purpose of utilizing the heat of combustion-product gases by the transfer of such heat to the process material; and (b) does not transfer a significant portion of heat by direct contact between the combustion-product gases and the process material.

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[1] 24360, Health and Safety Code of the State of California, contains additional provisions relating to the emission of air contaminants.

[2] Bold-face is used throughout this Regulation to indicate words defined in either Divisions 1 or 2. Except as otherwise specifically defined in this Regulation and except where the context otherwise indicates, words used in this Regulation are used in exactly the same sense as the same words are used in Chapter 2.5, Division 20, of the Health and Safety Code of the State of California.

.4 General Combustion Operation means any source operation in which combustion is carried on, exclusive of heat transfer operations, incineration operations, and salvage operations.

.5 General Operation means any source operation not included in 1110.1 through 1110.4 inclusive.

1111 This Regulation applies, as herein provided, to

.1 Sulfur dioxide from all operations listed in 1110.1 through 1110.5 inclusive.

.2 Particulate matter from all operations listed in 1110.1 through 1110.5 inclusive.

.3 Visible emissions from all operations listed in 1110.1 through 1110.5 inclusive.

.4 Hydrocarbons and carbonyls from incineration operations and salvage operations.

1112 Person means any natural person, a corporation, government agency, public officer, association, joint venture, partnership or any combination of such, jointly or separately, operating in concert for any common objective related to the purposes of this Regulation. It includes the owner, lessor, lessee, tenant, licensee, manager, and operator, or any of such, of any emission point or any source operation related thereto, or of any interest in such emission point or source operation.

(2.0) CHAPTER 2 - EXCLUSIONS FROM APPLICATION OF THIS REGULATION

This Regulation does not apply to emissions arising from the source operations listed in 1210 through 1222.

1210 Vehicles as defined by the Vehicle Code of the State of California; or aircraft.

1211 Internal combustion engines of less than 1500 cubic inches displacement; or any engine used solely as a standby source of motive power.

1212 Deleted by Resolution 578, dated May 7, 1969.

1213 Source operations or emission points or emissions where all of the requirements of 1213.1, 1213.2, and 1213.3 are met.

.1 The air contaminants shall be purposely emitted for the sole purpose of a specific beneficial use of a major portion of such air contaminants; and

.2 Essentially all of the air contaminants shall be confined to the area in which such beneficial use is obtained; and

.3 The quantity and nature of the air contaminants, and the proportion of air contaminant used in relation to amounts of other materials involved in the beneficial use of air contaminants, shall conform to accepted practice in the type of use employed.

1214 Experimental Operations where all of the requirements of 1214.1, 1214.2, and 1214.3 are met.

.1 The purpose of the operation and the need for the exception arises from investigation, experiment or research to advance the state of knowledge or to improve technique; and

.2 The control officer has given express prior approval which shall include limitation of time; and

.3 The health officer having jurisdiction has been consulted and concurred in all terms of the exceptions.

1215 Open Outdoor Fires which meet the requirements of 3, except 3e, Regulation 1; and fires used only for recreational purposes, residential heating, or occasional cooking of food for human beings, where such use is accomplished in a fireplace or barbecue pit. Amended by Resolution 578, dated May 7, 1969.

1216 Laboratory Equipment used exclusively for chemical or physical analyses or experimentation.

1217 Equipment for inspection of metal products.

1218 Portable brazing, soldering or welding equipment.

1219 Comfort air conditioning or comfort ventilating systems which are not designed to remove air contaminants generated by or released from specific units of equipment.

1220 Any emission point which is not an intended opening, and from which no significant quantities of air contaminants are emitted.

1221 Smoke generators which are intentionally operated for purposes of training observers in observing the shade or opacity of emissions under Division 3 of this Regulation.

1222 Orchard heaters in the County of Napa and in the portions of the Counties of Solano and Sonoma that are parts of the Bay Area Air Pollution Control District until June 30, 1972. (Added by Resolution 674, dated July 22, 1971.)

DIVISION 2 - DEFINITIONS

2010 Air Pollution Control Equipment means any operation which has as its essential purpose a significant reduction in (a) the emission of air contaminants, or (b) the effect of such emission. Amended by Resolution 578, dated May 7, 1969.

2011 Area of an Opening or Containing Device means the area of a projection of the opening or of the gas passage upon a plane to which the principal direction of gas flow is perpendicular.

2012 Atmosphere means the air that surrounds the earth, and includes the general volume of gases contained within any building or structure; but excludes both

(a) The gases contained in any building or structure specifically designed for and used as part of an air pollution abatement operation or in a piece of processing or operating equipment, or in any building from which no significant portion of the air contaminants contained therein escapes; and

(b) The gases traveling from a source operation to a collection system, provided such collection system collects the air contaminants discharged by such source operation to such a degree that no significant portion thereof escapes collection, and provided further that such collection system emits all collected gases through a Type "A" emission point.

2013 Auxiliary Fuel means any material which undergoes combustion in an incineration operation or in a salvage operation; but excludes any waste material, the combustion of which is a part of the principal purpose of the operation.

2014 Combustion means the rapid exothermic reaction of any material with oxygen.

2015 Containing Device means any stack, duct, flue, oven, kettle, or other structure or device which so contains an air contaminant, or a gas stream which contains or may contain an air contaminant, as essentially to prevent its entering the atmosphere except through such openings as may be incorporated for that purpose in the containing device; and excludes equipment used for air pollution abatement operations, and any other device which significantly changes the nature, extent, quantity, or degree of air contaminants in the gas stream or in which such change does or has a natural tendency to occur.

2016 Emission means the act of passing into the atmosphere an air contaminant or a gas stream which contains or may contain an air contaminant; or the material so passed to the atmosphere.

2017 Emission Point means the location (place in horizontal plane and vertical elevation) at which an emission enters the atmosphere.

2018 Exhaust Gas Volume means the total volume of gases emitted from an emission point.

.1 Facility means any contiguous property or parcels of property which are in reasonably close proximity owned by a person which contains one or more emission points.

.2 Indirect Source means a facility, building, structure, or installation, or combination thereof which causes or may cause mobile source activity that results in emissions of a pollutant, or creation of a pollutant for which there is a national or state air quality standard. Such indirect sources shall include, but not be limited to:

a) highways and roads

b) parking lots and garages

c) shopping centers and other retail facilities

d) recreational centers and amusement parks

e) sports stadiums

f) airports

g) residential, commercial or industrial developments

h) metropolitan redevelopment centers

i) governmental buildings

j) hospitals and other medical facilities

k) educational institutions

l) hotels and motels

m) office buildings

n) restaurants

o) theaters

Those indirect sources which are subject to permit requirements and all other requirements of this regulation are described in 1315, Sections 4, 5, 6, 7 and 8.

2019 General Combustion Operation is defined in 1110.4, Chapter 1, Division 1.

2020 General Operation is defined in 1110.5, Chapter 1, Division 1.

2021 Heat Transfer Operation is defined in 1110.3, Chapter 1, Division 1.

2022 Incineration Operation is defined in 1110.1 Chapter 1, Division 1.

.1 Kraft pulp mill means any combination of industrial operations which converts wood to pulp, and which uses in the pulping process an alkaline sulfide cooking liquor containg sodium hydroxide and sodium sulfide.

.2 Kraft recovery furnace means the combustion device, including the direct contact evaporator, in which pulping chemicals are converted to a molten smelt, and in which wood solids are incinerated.

2023 Operation means any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change in the chemical composition or chemical, or physical properties of a material. The following are given as examples, without limitation of the generality of the foregoing: heat transfer, calcination, double decomposition, fermentation, pyrolysis, electrolysis, combustion, material handling, evaporation, mixing, absorption, filtration, screening, and fluidization.

2024 Particulate Matter means any material which is emitted as liquid or solid particles, or both of such, but does not include uncombined water; for the purposes of this section 2024, material emitted at any temperature in excess of 500°F, may be deemed to have been emitted at 500°F. Particulate matter, as defined in this section 2024, shall be determined by the procedure specified in Chapter 3, Division 8.

2025 Person is defined in 1112, Chapter 1, Division 1.

2026 ppm (vol) means parts per million by volume.

2027 Process Weight means the total weight of all materials introduced into a source operation, including solid fuels, but excluding liquids and gases used solely as fuels, and excluding air introduced for purposes of combustion.

Process Weight Rate means a rate established as follows:

(a) For continuous or long-run steady-state source operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.

(b) For cyclical or batch source operations, the total process weight for a period which covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such period.

Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this section 2027 that interpretation which results in the minimum value for allowable emission shall apply.

2028 Salvage Operation is defined in 1110.2, Chapter 1, Division 1.

2029 Significant Dimension of an Area means the square root of the numerical value of the area.

2030 Source Gas Volume means the volume, in standard cubic feet, of all gases leaving a source operation; for purposes of this section 2030, the boundary of a source operation is that point or surface at which the separation of the air contaminants from the process materials, or the conversion of the process materials into air contaminants, is essentially complete.

2031 Source Operation means the last operation preceding the emission of an air contaminant, which operation (a) results in the separation of the air contaminant from the process materials or in the conversion of the process materials into air contaminants, as in the case of combustion of fuel; and (b) is not an air pollution abatement operation.

2032 Standard Conditions means a pressure of 14.7 pounds per square inch, absolute, and a temperature of 60 degrees Fahrenheit.

2033 Standard Cubic Foot of a Gas means that amount of the gas which would occupy a cube having dimensions of one foot on each side, if the gas were at standard conditions; calculations to determine the number of standard cubic feet corresponding to actual measured conditions shall follow accepted engineering practice.

2034 Standard Dry Cubic Foot of a Gas means that amount of the gas which would occupy a cube having dimensions of one foot on each side, if the gas were free of water vapor and at standard conditions; calculations to determine the number of standard dry cubic feet corresponding to actual measured conditions shall follow accepted engineering practice.

2035 Sunset and Sunrise mean the times of civil sunset and civil sunrise in San Francisco

.1 TRS (Total Reduced Sulfur) means the total reduced sulfur contained in hydrogen sulfide, mercaptans, dimethyl sulfide, demethyl disulfide and all other organic sulfide compounds, expressed as hydrogen sulfide. Sulfur dioxide, sulfur trioxide and sulfuric acid mist are not included in the definition of TRS.

2036 Type "A" Emission Point means an opening of reasonably regular geometry, preceded by a containing device which has a minimum length six times the significant dimension of the emission point and within such minimum length;has a reasonably straight gas flow channel; has smooth interior surfaces; has area and geometry essentially constant and equal to the emission point; and does not cause a significant change in the gross direction of gas flow.

2037 Type "B" Emission Point means any emission point not qualiying under 2036 as a Type "A" emission point.

2038 Quantity of emission from a Type "B" emission point shall be the quantity of emission computed by multiplying the quantity of emission from a test area by the proportion which the whole area bears to such test area. Such test area may be taken as the cross sectional area of the inlet to a sample probe. The emission from any test area of a Type "B" emission point shall be deemed to be representative in every respect of the emissions from the whole area of such Type "B" emission point. Emissions from the test area may be measured at the place and by the procedure which result in the highest measurement of air contaminants. This section shall not apply if other sampling and testing facilities which will disclose the nature, extent, quantity, and degree of air contaminants are provided by the person responsible for the emission.

(2.0)

DIVISION 3
GENERAL LIMITATIONS AND REQUIREMENTS

3000 This division applies to all source operations; namely, incineration, salvage, heat transfer, general combustion, and general operations as defined in 1110.1 through 1110.5 of Chapter 1, Division 1, unless such source operation is excluded under Chapter 2, Division 1.

(2.0) CHAPTER 1 - GENERAL LIMITATIONS

3110 VISIBLE EMISSIONS. Except as provided in 3111 through 3114, no person shall cause, let, permit, suffer, or allow the emission for more than three minutes in any one hour of a gas stream containing air contaminants which, at the emission point or within a reasonable distance of the emission point, is (Amended by Resolution No 398, dated March 3, 1965).

.1 As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart as published in the United States Bureau of Mines Information Circular 7718, or (Amended by Resolution 635, Dated November 5, 1970).

.2 Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in 3110.1; and the determination of such opacity shall be according to procedures in Chapter 6, Division 8.

3111 Where the presence of uncombined water is the only reason for the failure of an emission to meet the limitations of 3110, that section shall not apply. The burden of proof which establishes the application of this 3111 shall be upon the person seeking to come within its provisions. (Amended by Resolution No. 398, dated March 3, 1965).

3112 3110 shall not apply to any emission on the basis of any observation of an air contaminant observed while such contaminant is inside a bona fide building.

NOTES TO 3111

Note 1. The Control Officer from time to time prepares and distributes a statement of practice in administering 3111. These statements are not adopted by the Board of Directors as a part of this regulation. They are guides to staff activity and are intended to be helpful guides to the public.

Not 2. Water mist alone is not a "noxious mist" and therefore not an "air contaminant" as defined in Health and Safety Code 24348.3.

3113 If the person responsible for an emission can show that the emission meets all the requirements of this section 3113 as given in 3113.1 through 3113.7, then compliance with the limitations of this section 3113 instead of with the limitations of 3110 can be used by such person to show compliance of such emission with the limitations pertaining to visible emissions of this Regulation 2. The burden of showing compliance with each and all of the provisions of this section 3113 shall be upon the person seeking to come within its provisions.

.1 The emission is from a Type "A" emission point.

.2 The emission does not contain significant amounts of materials which are vapors at stack temperature and particulate matter at ambient temperature.

.3 The emission has a constant appearance which for the purposes of this section 3113 shall mean that the emission has a clearly discernible predominant darkness of shade or degree of opacity, in the sense of 3110, and that the aggregate of all the periods during which the observed shade or opacity differs by 0.5 Ringelmann number or more from such predominant shade or opacity does not exceed 3 minutes in any consecutive 60 minutes.

.4 During the time that all of the other requirements of this section 3113 are met, the emission does not contain more than "n" grains of particulate matter per standard cubic foot, where

$$n=0.06/L$$

and "L is the significant dimension of the emission point, in feet. Tests to determine compliance with this section 3113.4 shall follow the procedure given in Chapter 7, Division 8 (Amended by Resolution 635 dated November 5, 1970).

.5 The emission does not contain material other than the particulate matter determined in 3113.4 or uncombined water or both, that contributes significantly to the failure of the emission to meet the limitations of 3110.

.6 Only emissions of that darkness of shade, degree of opacity, or appearance of plume which have been observed pursuant to 3113.3 and 3113.4 and which emissions have been found to comply with the limitations of 3113.4 are permitted by this section 3113.

.7 The control officer may require a repeated showing of compliance with this section 3113 upon a significant change in operating conditions or upon observation of a significant change in the appearance of the plume.

3114 (Repealed by Resolution 635, dated November 5, 1970.)

.1 (Repealed by Resolution 635, dated November 5, 1970.)

.2 (Repealed by Resolution 635, dated November 5, 1970.)

.3 (Repealed by Resolution 635, dated November 5, 1970.)

3120 SULFUR DIOXIDE

3121 No person shall cause, let, permit, suffer, or allow any emission of sulfur dioxide which results in ground level concentrations of sulfur dioxide at any given point in excess of 0.5 ppm (vol) for 3 consecutive minutes or any of the limits specified in Table 1. 3121 shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point of any such concentration, is controlled by the person responsible for such emission. (Amended by Resolution 635, dated November 5, 1970.)

3122 Except as provided in 3123, no person shall cause, let, permit, suffer, or allow the emission of gas containing sulfur dioxide in excess of 300 ppm (vol). All sampling of exhaust gases shall follow the techniques prescribed in Chapter 2, Division 8. For purposes of this section 3122, all sulfur present in gaseous compounds containg oxygen shall be deemed to be present as sulfur dioxide, and analyses of samples taken to determine the amount of sulfur dioxide in exhaust gases shall be made as specified in Chapter 1, Division 9. Tests for determining compliance with this section 3122 shall be for not less than 15 consecutive minutes or 90% of the time of actual source operation, whichever is less. (Amended by Resolution 635, dated November 5, 1970.)

TABLE I

3121
MAXIMUM ALLOWABLE SULFUR DIOXIDE
GROUND LEVEL LIMITS

SO_2 Concentration ppm (vol)	Total Cumulative Exposure Between Sunrise and the Next Succeeding Sunrise in Hours	
	Where Particulate Matter Standard is Exceeded	Where Particulate Matter Standard is not Exceeded
Column 1	Column 2	Column 3
1.5	0.05	0.05
0.5	1.0	1.0
0.3	3.2	8.0
0.1	9.6	No Limit
0.04	24.0	No Limit

(Amended by Resolution 635, dated November 5, 1970.)

3123 Emissions exceeding the limits established in 3122 shall not constitute a violation of that section provided that all requirements of this section 3123, to wit, 3123.1 through 3123.9, inclusive, are satisfied.

.1 Such emissions shall not result in ground-level concentrations of sulfur dioxide exceeding the limits established by 3121.

.2 The person responsible for such emissions shall have notified the control officer in writing, prior to such emission, of his intent to operate under the provisions of 3123. Such notice shall include information as to the location of all significant emission points, the location of the monitoring stations specified in 3123.3 and 3123.4, and the nature of the source operations related to each such emission.

.3 Such person shall provide at least three recording sulfur dioxide monitoring stations located in the area surrounding the source, which stations shall be operated in accordance with the specifications of Chapter 4, Division 8.

.4 Such person shall provide at least one recording meteorological station equipped to record wind speed and wind direction.

.5 Such person shall provide the necessary car and maintenance services so that the instruments will function properly and adequately record sulfur dioxide exposures in the area.

.6 Such person shall provide to the control officer a summary of the data obtained from such instruments during each calendar month. Such summary shall be in such form and detail as will show the degree of compliance with 3121, and the time, location, extent, and duration of any recorded violation of the provisions of 3121; shall include data giving the total mass rate of emission of sulfur dioxide from the emission points specified in 3123.2, and a detailed report of instrument performance and maintenance; and shall be submitted within the calendar month immediately succeeding the recording of the data.

.7 Such person shall keep for a period of at least two years all records gathered as a result of this section 3123, and shall make these available to the control officer at his request. (Amended by Resolution 635, dated November 5, 1970.)

.8 Such person shall examine at the time of each instrument maintenance check and in any case at intervals of no greater than every seven days instrument records taken pursuant to the requirements of this section 3123 to determine compliance with 3121. Any recorded violation of 3121 shall be reported to the control officer within the next normal working day after such examinations. (Amended by Resolution 635, dated November 5, 1970.)

.9 Whenever the records indicate that a violation of 3121 has occurred the person responsible for such emission must furnish evidence that proper action has been taken to prevent recurrence, or a violation of 3123 will be deemed to have occurred and emission will be regulated by 3122. When instrument records are not adequate to show compliance with 3121 the control officer may specify the schedule to be followed for producing a satisfactory record history.

.10 Suspended particulate matter concentrations may be measured by the person responsible for the sulfur dioxide emissions to determine whether the maximum allowable sulfur dioxide ground level limits established in 3121 shall be the limits of Column 2 or Column 3 of Table 1. Such measurements of suspended particulate matter concentrations shall be in accordance with the provisions of 8414, 8415 and 8416, Chapter 4, Division 8. Such measurements shall be made at the same sites as the sulfur dioxide monitoring stations described in 8411 of Chapter 4, Division 8. (Add by Resolution 635, dated November 5, 1970.)

.11 The limitations established in Column 2 of Table 1 of 3121 shall be deemed to apply if suspended particulate matter concentrations are not measured and reported by the person responsible for the emission of sulfur dioxide. (Added by Resolution 635, dated November 5, 1970.)

3124 All persons subject to 3120, 3121 and 3122 may be required to install and maintain, at or within a reasonable distance before the emission point, sensing, indicating and recording equipment that will accurately sense, indicate and record minute by minute fluctuations of the volume of gases being emitted, and the presence and concentration of sulfur dioxide, subject to the conditions of 3124.4. (Added by Resolution 635, dated November 5, 1970.)

.1 The equipment required by Section 3124 shall be calibrated, maintained, serviced and repaired by the person responsible for the operation so that it will function and adequately sense, indicate and record the phenomena it is designed to sense, indicate and record. (Added by Resolution 635, dated November 5, 1970.)

.2 The records of the measurements required by 3124 shall be kept for a period of two years, and they shall be made available to the Control Officer at his request. (Added by Resolution 635, dated November 5, 1970.)

.3 The person responsible for the operation shall provide to the Control Officer a summary of the data obtained from the equipment required by 3124 during each calendar month. Such summary shall be in such form as is prescribed by the Control Officer. (Added by Resolution 635, dated November 5, 1970.)

.4 The Control Officer may require that instrumentation prescribed by 3124 shall be installed when he has reason to believe that emissions of sulfur dioxide exceeded those allowed by 3121 or 3122. (Added by Resolution 635, dated November 5, 1970.)

3131 No person shall cause, let, permit, suffer, or allow, from any source operation manufacturing sulfuric acid using as a principle raw material any sulfur-containing material, any emission having a concentration of SO_3 or H_2SO_4, or both, expressed as 100% H_2SO_4, exceeding 0.04 grain per standard dry cubic foot of exhaust gas volume. (Added by Resolution 635, dated November 5, 1970.)

.1 No person shall cause, let, permit, suffer, or allow, from any source operation manufacturing sulfur using as a principal raw material any sulfur-containing material, any emission having a concentration of SO_3 or H_2SO_4, exceeding 0.08 grain per standard dry cubic foot of exhaust gas volume. (Added by Resolution 635, dated November 5, 1970.)

(2.0) CHAPTER 2 - GENERAL REQUIREMENTS

3210 SAMPLING FACILITIES. The person responsible for emission of air contaminants, from any emission point, for which emission limits are established in this regulation shall, upon request of the Control Officer, provide in connection with such emission point and related source operations such sampling and testing facilities as may be necessary for proper determination of the nature, extent, quantity and degree of air contaminants which are or may be emitted as a result of such operation. Such facilities may be either permanent or temporary and shall be suitable for determination consistent with the emission limits established in this regulation; and shall comply with all applicable laws and regulations concerning safe construction or safe practice in connection with such facilities. (Amended by Resolution 635, dated November 5, 1970.)

.1 Where ambient air or source tests or any other data indicate that emissions of air contaminants from any emission point may be in potential violation of limits established in this regulation, the Control Officer may require the person responsible to monitor continuously that emission point or the ambient air for the specific contaminants or conditions (e.g., opacity) in potential violation. Such monitoring instruments may be either permanent or temporary and shall be suitable for determinations consistent with the emission limits established in this regulation; and shall comply with all applicable laws and regulations concerning safe construction or safe practice in connection with such instruments. (Added by Resolution 635, dated November 5, 1970.)

.2 The equipment required by Section 3210.7 shall be calibrated, maintained, serviced and repaired by the person responbible for the operation so that it will function and adequately sense, indicate and record the phenomena it is designed to sense, indicate and record. (Added by Resolution 635, dated November 5, 1970.)

.3 The records of the equipment required by Section 3210.1 shall be kept for a period of two years, and shall be made available to the Control Officer at his request. (Added by Resolution 635, dated November 5, 1970.)

.4 The person responsible for the operation shall provide to the Control Officer a summary of the data obtained from the equipment required by Section 3210.1 during each calendar month. Such summary shall be in such form as is prescribed by the Control Officer. (Added by Resolution 635, dated November 5, 1970.)

3211 REGISTRATION. Except as excluded by 1210 through 1222, Chapter 2, Division 1, each person responsible for emission of air contaminants, whether or not limits are established by this regulation for emission of such contaminants, shall register with the control officer: (1) his business name, (2) address, (3) name of responsible managing officer, (4) a description of the business entity and (5) the nature of the business. He shall thereafter provide, on an annual basis on registration forms provided by the control officer, any information regarding such emission as may be required. Every person regulated by this regulation may be served with notices, including notices of hearing before the Hearing Board, by certified mail, addressed to the address contained in the registration on file with the control officer. This section of the regulation shall be in full force and effect on September 1, 1960. (Amended October 19, 1972.)

.1 Source Emission Data

The person responsible for emission of air contaminants, from any emission point, for which emission limits are established in this or any other regulation of the district shall, upon request of the Air Pollution Control Officer provide in connection with such emission point and related source operations source emission data certified by a registered professional engineer in the State of California. Such data shall be in a form and manner prescribed by the Air Pollution Control Officer and shall contain sufficient information to disclose the nature and quantities of air contaminants being emitted from the emission point and related source operations.

3212 UPSET CONDITIONS, BREAKDOWN OR SCHEDULED MAINTENANCE. Emissions exceeding any of the limits established in this regulation as a direct result of upset conditions in or breakdown of any air pollution control equipment or related operating equipment, or as a direct result of the shutdown of such equipment for scheduled maintenance, shall not be deemed to be in violation of the rules establishing such limits, provided all the requirements of this section 3212, to wit, 3212.1 through 3212.3, are met.

.1 Such occurrence shall have been reported to the offices of the District as soon as reasonably possible; for scheduled maintenance, such report shall be submitted at least 24 hours prior to shutdown, and for upset conditions or breakdown, such report shall in any case be made within four hours of the occurrence.

.2 3212 shall not apply to scheduled maintenance of air pollution control equipment except in those cases where the maximum reasonable effort, including off-shift labor where required, has been made to accomplish such maintenance during periods of non-operation of any related source operations.

.3 The person responsible for such emission shall, with all practicable speed, initiate and complete appropriate reasonable action to correct the conditions causing such emissions to exceed said limits; to reduce the frequency of occurrence of such conditions; to minimize the amount by which said limits are exceeded; and to reduce the length of time for which said limits are exceeded; and shall, upon request of the control officer, submit to the control officer a full report of such occurrence, including a statement of all known causes and of the scheduling and nature of the actions to be taken pursuant to this section 3212.3.

3213 SEPARATION OF EMISSIONS. If air contaminants from a single source operation are emitted through two or more emission points, the total emitted quantity of any air contaminant, limited in this Regulation 2, cannot exceed the quantity which would be the allowable emission through a single emission point; and the total emitted quantity of any such air contaminant shall be taken as the product of the highest concentration measured in any of the emission points and the exhaust gas volume through all emission points, unless the person responsible for the source operation establishes the correct total emitted quantity.

3214 COMBINATION OF EMISSIONS.

.1 If air contaminatns from two or more source operations are combined prior to emission and there are adequate and reliable means reasonably susceptible to confirmation and use by the control officer for establishing a separation of the components of the combined emission to indicate the nature, extent, quantity and degree of emission arising from each such source operation, this Regulation 2 shall apply to each such source operation separately.

.2 If air contaminants from two or more source operations are combined prior to emission and the combined emissions cannot be separated according to the requirements of 3214.1 this Regulation 2 shall be applied to the combined emission as if it originated in a single source operation subject to the most stringent limitations and requirements placed by this Regulation 2 on any of the source operations whose air contaminants are so combined.

(51.9)

DIVISION 4
INCINERATION AND SALVAGE OPERATIONS

(2.0) CHAPTER 1 - LIMITATIONS

4110 SULFUR DIOXIDE. No person shall cause, let, permit, suffer, or allow the emission from any incineration operation or salvage operation of sulfur dioxide in excess of the limits provided in 3121 and 3122, Chapter 1, Division 3.

.1 No person shall cause, let, permit, suffer, or allow, the emission from any incineration operation or salvage operation of hydrogen sulfide in excess of the limitations provided in 11100 through 11102.8, Chapter 1, Division 11. (Added by Resolution 635, effective November 5, 1971.)

4111 VISIBLE EMISSIONS

.1 No person shall cause, let, permit, suffer or allow any emission from any incineration operation or salvage operation which does not comply with the visible emission limitations in 3110, Chapter 1, Division 3.

.2 No person shall use, let, permit, suffer or allow the emission from any incineration operation or salvage operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 4111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

4112 PARTICULATE MATTER. (Amended by Resolution No. 258, dated October 18, 1961)

.1 No person shall cause, let, permit, suffer, or allow, any emission from any incineration operation or salvage operation, capable of burning not more than 100 tons of waste or salvage material per day, of particulate matter in excess of a concentration of 0.15 grain per standard dry cubic foot of exhaust gas. For the purposes of this 4112.1, the actual measured concentration of particulate matter in the exhaust gas shall be corrected to the concentration which the same quantity of particulate matter would constitute in the exhaust gas, minus water vapor, corrected to standard conditions, containing 6% oxygen by volume, and as if no auxiliary fuel had been used. (Amended by Resolution 258, dated October 18, 1961 and amended by Resolution 635, dated November 5, 1970.)

.2 No person shall cause, let, permit, suffer, or allow, any emission from any incineration operation or salvage operation, capable of burning more than 100 tons of waste or salvage material per day, of particulate matter in excess of a concentration of 0.05 grain per standard dry cubic foot of exhaust gas. For the purposes of this 4112.2, the actual measured concentration of particulate matter in the exhaust gas shall be corrected to the concentration which the same quantity of particulate matter would constitute in the exhaust gas, minus water vapor, corrected to standard conditions, containing 6% oxygen by volume, and as if no auxiliary fuel had been used. (Amended by Resolution 258, dated October 18, 1961 and amended by Resolution 635, dated November 5, 1970.)

.3 Calculation of the corrected concentration from the actual measured concentration shall be as given in Chapter 1, Division 8. Tests for determining compliance with 4112.1 and 4112.2 shall be for not less than 50 minutes in 60 consecutive minutes, or 90% of the time of actual source operation, whichever is less. (Added by Resolution 635, dated November 5, 1970.)

4113 HYDROCARBONS AND CARBONYLS. No person shall cause, let, permit, suffer, or allow the emission from any incineration operation or salvage operation of an exhaust gas containing a concentration of more than 25 ppm (vol) of total hydrocarbons, or a concentration of more than 25 ppm (vol) of total carbonyls. For purposes of this 4113, the actual measured concentrations of hydrocarbons and carbonyls in the exhaust gas shall be corrected to concentrations which the same quantities of hydrocarbons and carbonyls would constitute in the exhaust gas minus water vapor, corrected to standard conditions, containing 6% oxygen by volume, and as if no auxiliary fuel had been used. Calculation of this corrected concentration from the actual measured concentration shall be as given in Chapter 1, Division 8. For the purposes of this 4113, total hydrocarbons shall be the sum of the concentrations in ppm (vol) of the individual concentrations of C_2 and higher saturated and unsaturated hydrocarbons, as measured by gas chromatography as described in Chapter 4, Division 9. Total carbonyls shall include aldehydes and ketones determined as described in Chapter 5, Division 9, and calculated as formaldehyde, each carbonyl group being deemed equivalent to one molecule of formaldehyde. Tests for determining compliance with this 4113 shall be for not less than 15 consecutive minutes or 90% of the time of actual source operation, whichever is less. (Amended by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)

(2.0) CHAPTER 2 - REQUIREMENTS

4210 Every person responsible for an emission regulated by 4111.1 shall have and maintain means whereby the operator of the equipment shall be able at all times during the operation to know the appearance of the emission.

4211 During periods in which tests are being made to determine the nature, extent, quantity, or degree of air contaminants which are or may be emitted from an incineration operation or a salvage operation, such operation shall be carried on in accordance with the requirements of Chapter 5, Division 8.

(2.0) CHAPTER 3 - EXCEPTIONS

4310 Deleted by Resolution 578, dated May 7, 1969.

(51.21)

DIVISION 5
HEAT TRANSFER OPERATIONS

(2.0) CHAPTER 1 - LIMITATIONS

5110 SULFUR DIOXIDE. No person shall cause, let, permit, suffer, or allow the emission from any heat transfer operation of sulfur dioxide in excess of the limits provided in 3121 and 3122, Chapter 1, Division 3.

.1 No person shall cause, let, permit, suffer, or allow, the emission from any heat transfer operation of hydrogen sulfide in excess of the limitations provided in 11100 through 11102.8, Chapter 1, Division 11. (Added by Resolution 635, dated November 5, 1970.)

5111 VISIBLE EMISSIONS.

.1 No person shall cause, let, permit, suffer, or allow any emission from any heat transfer operation which does not comply with the visible emission limitations in 3110, Chapter 1, Division 3, except as provided in 5111.3.

.2 No person shall cause, let, permit, suffer, or allow the emission from any heat transfer operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 5111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

.3 The limitations of 5111.1 shall not apply to emissions resulting from soot-blowing on any oil fired heat transfer operation, provided such emissions are not equal to or greater than Ringelmann No. 3 or an equivalent obscuration within the meaning of 3110.1 and 3110.2; and provided further that the aggregate duration of such emissions during any twenty-four hour period does not exceed 6.0 minutes per billion BTU gross heating value of oil fuel burned during such twenty-four hours; and provided further that such operation uses fuel at a rate not less than 40 million BTU per hour.

5112 PARTICULATE MATTER. No person shall cause, let, permit, suffer, or allow any emission from a heat transfer operation of particulate matter in excess of 0.15 grain per standard dry cubic foot of exhaust gas. For the purposes of this section 5112, the actual concentration measured shall be corrected to a concentration which the same quantity of particulate matter would constitute in the exhaust gas minus water vapor, corrected to standard conditions and containing 6% oxygen by volume. Calculation of this corrected concentration from the actual measured concentration shall follow the procedure given in Chapter 1, Division 8. Tests to determine compliance with this section 5112 shall be for not less than 50 minutes in any consecutive 60 minutes, or 90% of the time of actual source operation, whichever is less. (Amended by Resolution 635, dated November 5, 1970.)

(2.0) CHAPTER 2 - REQUIREMENTS

5210 Every person responsible for an emission regulated by 5111.1 shall have and maintain means whereby the operator of the equipment shall be able at all times during the operation to know the appearance of the emission. This section shall not apply to operations using fuel supplied to the burner piping in a gaseous state; nor to operations using gaseous fuel on an interruptible service contract from a public utility, during the burning of alternate fuel.

(51.21) DIVISION 6

GENERAL COMBUSTION AND GENERAL OPERATIONS

(2.0) CHAPTER 1 - LIMITATIONS

6110 SULFUR DIOXIDE. No person shall cause, let, permit, suffer, or allow the emission from any general combustion operation or general operation of sulfur dioxide in excess of the limits provided in 3121 and 3122, Chapter 1, Division 3.

.1 No person shall cause, let, permit, suffer, or allow, the emission from any general combustion operation or general operation of hydrogen sulfide in excess of the limitations provided in 11100 through 11102.8, Chapter 1, Division 11. (Added by Resolution 635, dated November 5, 1970.)

6111 VISIBLE EMISSIONS

.1 No person shall cause, let, permit, suffer, or allow any emission from any general combustion operaton or general operation which does not comply with the visible emission limitations in 3110, Chapter 1, Division 3.

.2 No person shall cause, let, permit, suffer, or allow the emission from any general combustion operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 6111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

6112 PARTICULATE MATTER

.1 No person shall cause, let, permit, suffer, or allow the emission from any general operations or general combustion operation of particulate matter from any emission point in a concentration in excess of 0.15 grain per standard dry cubic foot of exhaust gas volume. (Amended by Resolution 635, dated November 5, 1970.)

.2 No person shall cause, let, permit, suffer, or allow the emission from any general operation or general combustion operation of particulate matter from any emission point at a rate in excess of that specified in Table 2 for the process weight rate allocated to such emission point. (Amended by Resolution 635, November 5, 1970.)

TABLE 2
ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE

Process Weight Rate		Rate of Emission	Process Weight Rate		Rate of Emission
Lb/Hr	Tons/Hr	Lb/Hr	Lb/Hr	Tons/Hr	Lb/Hr
100	0.05	0.551	16,000	8.00	16.5
200	0.10	0.877	18,000	9.00	17.9
400	0.20	1.40	20,000	10.	19.2
600	0.30	1.83	30,000	15.	25.2
800	0.40	2.22	40,000	20.	30.5
1,000	0.50	2.58	50,000	25.	35.4
1,500	0.75	3.38	60,000	30.	40.0
2,000	1.00	4.10	70,000	35.	40.0
2,500	1.25	4.76	80,000	40.	40.0
3,000	1.50	5.38	90,000	45.	40.0
3,500	1.75	5.96	100,000	50.	40.0
4,000	2.00	6.52	120,000	60.	40.0
5,000	2.50	7.58	140,000	70.	40.0
6,000	3.00	8.56	160,000	80.	40.0
7,000	3.50	9.49	200,000	100.	40.0
8,000	4.00	10.4	1,000,000	500.	40.0
9,000	4.50	11.2	2,000,000	1,000.	40.0
10,000	5.00	12.0	6,000,000	3,000.	40.0
12,000	6.00	13.6			

Interpolation of the date in this Tabel shall be accomplished by use of the equation:

$$E=4.10\ P^{0\ 67}$$

where E= rate of emission in lb/hr, not to exceed 40 lb/hr
and P= process weight rate in tons/hr.

(Added by Resolution 635, dated November 5, 1970.)

Sections of major importance with reference to this Tabel are 2024, 2027, 3213, 3214, and 6112.2.

.3 The limitations established by 6112.2 shall not require the reduction of particulate matter concentration, based on the source gas volume, below the concentration specified in Table 3 for such volume; provided that, for the purposes of this section 6112.3, the person responsible for the emission may elect to substitute a volume determined according to the provisions of 6112.4; and provided further that the burden of showing the source gas volume or other volume substituted therefor, including all of the factors which determine such volume and the methods of determining and computing such volume, shall be on the person seeking to come within the provisions of this section 6112.3.

.4 Any volume of gases passing through and leaving an air pollution abatement operation may be substituted for the source gas volume of the source operation served by such air pollution abatement operation, for the purposes of 6112.3, provided such air pollution abatement operation emits no more than 40% of the weight of particulate matter entering thereto; and provided further that such substituted volume shall be corrected to standard conditions and to a moisture content no greater than that of any gas stream entering such air pollution abatement operation.

6113 Deleted by Resolution 578, dated May 7, 1969.

.1 Deleted by Resolution 578, dated May 7, 1969.

.2 Deleted by Resolution 578, dated May 7, 1969.

TABLE 3
MINIMUM CONCENTRATION TO BE REQUIRED [a,b]

Source Gas Volume, SCFM	Concentration GR/SCF	Source Gas Volume, SCFM	Concentration GR/SCF
7,000 or less	0.100	140,000	0.038
		160,000	0.036
8,000	0.096	180,000	0.035
9,000	0.092		
10,000	0.089	200,000	0.034
20,000	0.071	300,000	0.030
30,000	0.062	400,000	0.027
40,000	0.057	500,000	0.025
50,000	0.053	600,000	0.024
60,000	0.050	800,000	0.021
80,000	0.045	1,000,000 or more	0.020
100,000	0.042		
120,000	0.040		

[a] Sections of major importance with reference to this table are 2024, 2030, 6112.3, and 6112.4.

[b] Interpolation of the data in this table shall be based on linear interpolation between adjacent values.

(2.0) CHAPTER 2 - EXCEPTIONS

6200 Emissions from the following listed source operations shall be subject to this section 6200, to 3211, 3213, and 3214, and to all of Division 7, and to no other part of this regulation, provided that such emissions are minimized by the best modern practices, methods and concepts which may, from time to time, be reasonably applied. This section 6200 shall not require such source operations to meet limits more restrictive than the limits which would otherwise apply to such operations under other provisions of this regulation.

6210 Repealed by Resolution 635, dated November 5, 1970.

6211 Repealed by Resolution 635, dated November 5, 1970.

6212 Repealed by Resolution 635, dated November 5, 1970.

6213 Repealed by Resolution 635, dated November 5, 1970.

6214 Repealed by Resolution 635, dated November 5, 1970.

6215 Repealed by Resolution 635, dated November 5, 1970.

6216 Repealed by Resolution 635, dated November 5, 1970.

6217 Repealed by Resolution 635, dated November 5, 1970.

6218 Blasting.

6219 Repealed by Resolution 635, dated November 5, 1970.

6220 Amended by Resolution 258, dated October 18, 1961. Repealed by Resolution 578, dated May 7, 1969.

(2.0)

DIVISION 7
GENERAL PROVISIONS

(6.0)

CHAPTER 1 - TIME FOR COMPLIANCE

7110 This regulation shall be in full force and effect January 1, 1961, except that 3211, Chapter 2, Division 3, shall be in full force and effect September 1, 1960.

7111 A reasonable time for compliance with this regulation shall be allowed by the control officer provided that persons responsible for any emission not in compliance with this regulation submit reports to the control officer at his request which are acceptable to him, and which give the expected time for compliance, the intended method of compliance, and the progress towards compliance.

7112 Persons responsible for emissions which will not be in compliance with this regulation on January 1, 1961, and for which emissions a reason able time for compliance beyond such date is required, shall comply with 7111 October 1, 1960.

7113 Time for compliance shall include each of the following: time for engineering, time for procurement, time for fabrication, and time for installation and adjustment. The control officer may require such periodic reports on each phase of progress toward compliance as may be necessary to show reasonable progress toward completion of such installations as are required for final compliance shall be deemed an unreasonable delay in compliance.

(2.0)

CHAPTER 2 - GENERAL

7210 Nothing in this regulation authorizes or is intended to authorize any practice or combination of practices intended or designed to evade or circumvent the basic requirements of this regulation.

7211 Nothing in this regulation is intended to permit any practice which is a violation of any statute, ordinance, rule or regulation.

7212 This regulation is not intended to apply to the quality requirements for the workroom atmosphere necessary to protect an employee's health from contaminants emitted by his employer; nor is it concerned with the occupational health factors in an employer-employee relationship.

7213 Wherever in this regulation a section makes a requirement of emissions, and other provisions of this regulation are less restrictive as to emissions under certain conditions or operations, violation of the most restrictive requirement shall be a violation of this regulation unless the person responsible for the emission shall establish that a less restrictive part of this regulation applies in the specific case.

7214 When the person who is the owner of a source operation is not the same as the person who is the owner of the emission point discharging air contaminants which originate in such source operation, the person who is the owner of the emission point shall be responsible for complying with this regulation. For the purposes of this section 7214, "owner" shall include owner, lessee, tenant, licensee, manager or operator, or any of such.

7215 SEVERABILITY. If any provision, clause, sentence, paragraph, section or part of this regulation or application thereof to any person or circumstance shall for any reason be adjudged by a court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of this regulation and the application of such provision to other persons or circumstances, but shall be confined in its operation to the provision, clause, sentence, paragraph, section or part thereof directly involved in the controversy in which such judgment shall have been rendered and to the person or circumstance involved, and it is hereby declared to be the intent of the Board of Directors that this regulation would have been adopted in any case had such invalid provision or provisions not be included.

(9.0) DIVISION 8
CALCULATION METHODS AND GENERAL SAMPLING PROCEDURES

(9.0) CHAPTER 1 - CALCULATIONS

8100 Calculation of emissions of air contaminants shall be accomplished by the calculation methods prescribed in this Chapter 1, or by methods which yield equivalent results. All calculation methods not specifically prescribed in this regulation shall conform to accepted engineering practice.

8110 Correction for the use of auxiliary fuel shall be as specified in 8111, and correction to a basis of 6% oxygen by dry volume shall be as specified in 8112. For the purposes of 8111 and 8112 the term "measured volume" shall mean the emitted or metered volume to be corrected, expressed in standard cubic feet.

8111 AUXILIARY FUEL CORRECTION. This calculation is intended to correct the measured volume to the volume which would have existed if the auxiliary fuel had not been introduced, and results obtained by this procedure shall be deemed to represent such correction. The method consists of four steps:

(a) Calculate the amount of oxygen required for stoichiometric combustion of the auxiliary fuel, at the rate of combustion occurring during the period of test.

(b) Calculate the composition and quantity of the products of such stoichiometric combustion in oxygen.

(c) Add, to the measured volume, the amount of oxygen calculated in step (a)

(d) Subtract, from the result of step (c), the volume of combustion products calculated in step (b); the result is the measured volume corrected for auxiliary fuel use.

EXAMPLE: Assume that the gases emitted for an operation using auxiliary fuel total 400,000 standard cubic feet during a test period, and have a composition as shown in the "measured" column of the tabulation below. Assume further that auxiliary fuel usage during the test is 6,000 standard cubic feet of methane, CH_4.

(a) Stoichiometric Combustion of Auxiliary Fuel

$$\overset{6,000}{CH_4} + \overset{12,000}{2O_2} \longrightarrow \overset{6,000}{CO_2} + \overset{12,000}{2H_2O}$$

12,000 standard cubic feet of oxygen required.

(b) 18,000 standard cubic feet of combustion product;
6,000 standard cubic feet CO_2, 12,000 standard cubic feet H_2O

(c) 400,000 + 12,000 = 412,000

(d) 412,000 + 18,000 = 394,000 standard cubic feet

TABULATION OF VOLUME CHANGE (SCF)

Component	Measured	Correction	Final
CO_2	40,000	− 6,000	34,000
CO	8,000		8,000
O_2	21,600	+ 12,000	33,600
N_2	281,200		281,200
H_2O	49,200	− 12,000	37,200
Total	400,000	− 6,000	394,000

8112 OYXGEN CORRECTION This calculation is intended to correct the measured concentration of an air contaminant to that which would exist if the same quantity of air contaminant were contained in a dry volume corrected to an oxygen content of 6%; and results obtained by this procedure shall be deemed to represent such correction. Where correction for the use of auxiliary fuel is applicable, the volume and composition resulting from the correction procedure of 8111 shall be taken as the measured volume for purposes of this section 8112. The method consists of six steps:

(a) Subtract any water vapor content of the measured volume, to give a dry volume.

(b) Calculate the oxygen content of the measured volume as a decimal fraction of the dry volume obtained in step (a).

(c) From the figure 0.2095 (average atmospheric oxygen content) subtract the decimal fraction of oxygen as obtained in step (b).

(d) Divide the result of step (c) by 0.1495. (This is 0.2095 0.06.)

(e) Multiply the dry volume obtained in step (a) by the quotient obtained in step (d) to give the corrected dry volume on a 6% oxygen basis.

(f) Divide the weight of air contaminant, in grains, by the corrected volume obtained in step (e) to give the corrected concentration.

Example:
Assume an emitted gas composition as follows:

Component	% (Vol., wet)	% (Vol., dry)	SCF
CO_2	8.64	9.53	34,000
CO	2.03	2.24	8,000
O_2	8.53	9.42	33,600
N_2	71.36	78.81	281,200
H_2O	9.44	0.00	37,200
Total	100.00	100.00	394,000

Also assume the weight of air contaminant is 7.9 pounds.

(a) 394,000 − 37,200 = 356,800 SCF, dry volume

(b) $\frac{33,600}{356,800}$ = 0.0942, volume fraction of oxygen

(c) 0.2095 − 0.0942 = 0.1153

(d) $\frac{0.1153}{0.1495}$ = 0.782

(e) (0.782) (356,000) = 275,800 SDCF, at 6% oxygen, the corrected volume.

(f) $\frac{(7.9 \text{ lb}) (7000 \text{ gr/lb})}{275,800 \text{ SDCF}}$ = 0.20 gr/SDCF, the corrected concentration.

Where a concentration subject ot this correction is based on a measured volume, the correction shall consist of multiplying the concentration by the ratio of the measured volume to the corrected volume obtained in step (e) above.

(9.0) CHAPTER 2 - STANDARD GAS SAMPLING PROCEDURES FOR VENTS AND STACKS

8200 The following stack sampling procedures shall be adhered to in the determination of gaseous emissions. The controlling factor in all source test procedures shall be that every reasonable effort will be made to obtain and deliver for analysis samples which are truly respresentative of the emissions of the gases being determined. No other procedure may be used unless such other procedure results in equivalent determinations of the gaseous emissions being sampled.

8210 Proper adjustments shall be made in the sampling procedure to compensate for significant stratification and non-homogeneity in the gas stream, so that the sample of the gas stream approaches a representative sample.

8211 All sampling lines shall be free of significant leakage, and between the sample gas inlet and the sample collection device they shall be as short as is compatible with the sampling situation, and composed of materials not significantly affecting or affected by the constituents of the sample stream. The sampling lines shall be purged thoroughly with the gas to be sampled prior to the taking of the sample.

8212 Where liquid filled impingers are used for the sampler, any filter preceeding the impingers shall be maintained at standard particulate sampling temperatures, as specified in 8312.

8213 Where an evacuated flask is used for sample collection, any filter preceding the sampler may be maintained at ambient temperature.

8214 Evacuated flasks used for sampling shall be handled in such a manner that significant leaks can be detected, and in the event of such a leak, the flask shall not be used.

8215 All equipment used for sampling shall be adequately cleaned prior to use.

8216 Adequate precautions will be taken to avoid loss and contamination of the sample.

8217 Where liquid-filled impingers are used for sampling, at least two impingers will be connected in series and will contain solution and will be partially immersed in an ice bath.

A third impinger in series will follow and shall contain no solution.

8218 All sampling lines shall be checked for the presence of condensates. If condensation has occurred adjustments in procedure shall be made either to prevent its occurrence or to compensate for the condensed material in the sample.

8219 Where impingers or other continuous flow sampling devices are used a gas measuring device placed in series with and downstream of the samplers shall be used to determine the volume of gas sampled. Pressure and temperature indicators shall be installed at appropriate points to indicate sample gas conditions.

8220 Sufficient test data and notes shall be recorded at the time of the test by the personnel conducting the sampling to permit the determination of emissions of pollutant gases and to permit evaluation of results at a later date.

8221 Where samples are held more than 24 hours before analysis evidence must be presented to show that any deterioration of the collected samples prior to analysis would not be significant.

8222 Any procedure or condition prescribed by any other part of this regulation shall be adhered to in any applicable sampling test.

(9.0) CHAPTER 3 - PARTICULATE MATTER SAMPLING PROCEDURES FOR VENTS AND STACKS

8300 The following sampling procedures shall be adhered to in the determination of particulate matter emissions. The controlling factor in all source test procedures shall be that every reasonable effort shall be made to obtain samples which are truly representative of the emissions of the particulate matter being determined.

8310 Proper adjustments shall be made in the sampling procedure to compensate for significant stratification and non-homogeneity of particulate matter in the emission, so that a reasonably representative sample is obtained. Probe size and sampling rate shall be such as to give a reasonably representative sample.

8311 All tests of source operations shall employ sample collection devices which are capable of reducing the concentration of particulate matter in the gases leaving such devices to not more than 10% of the concentration of particulate matter in the gases entering such devices; provided that this section 8311 shall not require such collection devices to reduce the concentration in the effluent gases to a concentration below 0.0005 grains per standard dry cubic foot.

8312 Insofar as circumstances reasonably permit the devices required by 8311 shall be positioned directly in the gas stream being sampled. Where they are not so positioned they shall be maintained at a temperature not differing by more than 30°F from the emission temperatures; provided that this section 8312 shall not require the temperature of such devices to exceed 470°F.

8313 Accepted engineering practice shall be followed in any test procedure employed for the determination of gas flow rate, gas composition, moisture content, gas density, process weight rate, or flow rate or composition of auxiliary fuel.

8314 Adequate precautions shall be taken to avoid loss or contamination of the sample, and shall include suitable cleaning of the sampling equipment prior to and after use.

8315 All sampling lines shall be free of significant leakage, and between the sample gas inlet and the sample collection device they shall be as short as is compatible with the sampling situation, and composed of materials not significantly affecting or affected by the constituents of the sample stream.

8316 Prior to weighing of the sample, the sample shall be reduced to dryness by methods and under conditions which do not permit significant change in the weight of particulate matter.

8317 Where the requirements of 8316 permit such procedure the sample shall be dried at a temperature not less than 218°F. nor more than 224°F. for a period of one to two hours after superficial dryness is reached. Samples dried in such a manner shall be conclusively deemed to be free of uncombined water.

8318 Sufficient test data and notes shall be recorded at the time of the test by the personnel conducting the sampling to permit the determination of emissions and to permit evaluation of results at a later date.

8319 Any procedure or condition prescribed by any other part of this regulation shall be adhered to in any applicable sampling test.

(9.0) CHAPTER 4 - AREA-MONITORING OF SULFUR DIOXIDE GASES

8410 SCOPE. This procedure outlines the techniques to be used for atmospheric sampling for sulfur dioxide concentrations in order to fulfil requirements of 3121 and 3123.

8411 OUTLINE OF PROCEDURE. Sulfur dioxide concentrations in the atmosphere at ground-level shall be determined by continuously operated recording instruments so located with respect to each major source that the gas in that locality will be properly measured. In no case shall fewer than three instruments be used.

8412 INSTRUMENT SPECIFICATION. The recording instruments shall be of a type which will continuously detect and record minute-by-minute fluctuations of concentrations of sulfur dioxide in the range from 0.1 ppm (vol) to 1.5 ppm (vol).

8413 CALIBRATION. All instruments shall be calibrated in their field locations against either standard solutions (or conductivity standards) or separate ambient air samples taken in periods of sufficient duration to give results which the recording apparatus is expected to register during the respective period. These samples are to be analyzed immediately in accordance with the provisions of Chapter 2, Division 9. Alternate methods of at least equal accuracy may be substituted. Calibration must be at such intervals as to assure valid records.

(9.0) CHAPTER 5 - SPECIFICATIONS FOR TESTING OF INCINERATION OPERATIONS AND SALVAGE OPERATIONS

8510 Any incinerator to be tested shall have been registered.

8511 The incinerator will be tested under a range of operations that includes a detectable degree of smoke-back through the charging doors, except that where either the maximum control and feet settings or the maximum physically possible charging rate of the registered types of materials do not result in such smoke-back, the range of operations shall include a charging rate which is the maximum permitted by such control and physical limitations.

8512 Material charged during the test period will, insofar as reasonably possible, be representative of material normally charged to the incinerator.

8513 Full-time operation is operation using an operator whose sole duty with minor exceptions is the operation of the incinerator for a minimum of 30 hours per week.

8514 Part-time operation is any operation other than full-time operation.

8515 Tests on any incinerator that is operated on a part-time basis shall be accomplished without a preheat period.

8516 Any incinerator to be tested shall be sampled during burn-down as well as during the stabilized and light-up or preheat periods whichever apply.

(9.0) (6.0) CHAPTER 6 - PROCEDURE FOR MAKING OBSERVATIONS TO DETERMINE COMPLIANCE WITH 3110

8600 The provisions of this Chapter shall govern observations of emissions to determine compliance with 3110. These provisions shall be applied to each observation to the extent they are applicable, and to whatever extent time and physical circumstances reasonably permit.

8610 Observations shall be made from any position such that the line of observation is at approximately a right angle to the line of travel of the emitted material.

8611 The plume shall be observed against a suitable background.

8612 Observations during daylight hours should be made with the observer facing generally away from the sun.

8613 Observations during hours of darkness should be made with the aid of a light source.

8614 Readings shall be noted at approximately 15 second intervals during observation, except that intervals up to 1 minute shall be permitted where the appearance of the emission does not vary during such interval.

8615 The general color of the emission during the period of observation shall be noted as a part of the record of observation.

(9.0) CHAPTER 7 - DETERMINATION OF THE CONCENTRATION OF PARTICULATE MATTER FOR THE PURPOSES OF 3113

8710 Concentration of particulate matter shall be calculated as the average of at least two tests.

8711 Each such test shall be for a minimum of 30 minutes at a sampling rate of not more than 3.0 standard cubic feet per minute.

8712 Except as limited by minimum time and allowable rate in 8711 the minimum volume sampled during each test shall be "V_m" standard cubic feet where

$$V_m = 20\ L^{0.8}$$

where "L" is the significant dimensions of the emission point in feet.

8713 During the entire period of each test the appearance of the emission shall be observed by the control officer to determine its shade or opacity in the sense of 3110.

8714 Where uncombined water is a significant factor in the appearance of the emission the tests and observations required by 3113.4 shall be performed at a time when the relative humidity of the ambient atmosphere is less then 50%.

8715 Tests required by this Chapter shall meet the requirements of Chapter 3, Divison 8.

(9.0) CHAPTER 8 - AREA MONITORING OF HYDROGEN SULFIDE GAS

8810 SCOPE. This procedure outlines the techniques to be used for atmospheric sampling for H_2S concentrations in order to fulfill requirements of 11101. (Added by Resolution 635, dated November 5, 1970.)

8811 OUTLINE OF PROCEDURE. H_2S concentrations in the atmosphere at ground-level shall be determined by continuously operated recording instruments so located with respect to each major source that the gas in that locality will be properly measured. In no case shall fewer than three instuments be used. (Added by Resolution 635, dated November 5, 1970.)

8812 INSTRUMENT SPECIFICATION. The recording instruments shall be of a type which will continuously detect and record minute-by-minute fluctuations of concentrations of H_2S in the range from 0.02 ppm (vol) to 0.10 ppm (vol). (Added by Resolution 635, dated November 5, 1970.)

8813 CALIBRATION. All instruments shall be calibrated in their field locations against either standard gases containing known concentrations of H_2S or separate ambient air samples taken in periods of sufficient duration to give results which the recording apparatus is expected to register during the respective period. These samples are to be analyzed immediately in accordance with the provisions of Chapter 7, Division 9. Alternate methods of at least equal accuracy may be substituted. Calibrations must be at such intervals as to assure valid records. (Added by Resolution 635, dated November 5, 1970.)

(9.0) DIVISION 9
ANALYTICAL PROCEDURES

(9.0) CHAPTER 1 - DETERMINATION OF TOTAL SULFUR OXIDES IN SAMPLES TAKEN FROM GAS STREAMS

9110 SCOPE. This method describes a procedure for the determination of the total sulfur oxides in exhaust gases.

9111 INTERFERENCES. Acidic and alkaline materials interfere if present in waste gases and corrections may be made for them by the use of specific analytic techniques. Any sulfuric acid collected in the impinger shall be included as sulfur oxides.

9112 OUTLINE OF METHOD. The sulfur oxides are absorbed from the gas stream in a solution of hydrogen peroxide. The acid formed in titrated with standard alkali.

9113 APPARATUS. Sampling train consists of 3 Greenburg-Smith impingers or other adequate absorbing devices, each containing 100 ml of 3 per cent H_2O_2. The impingers are connected in series, followed by a dry meter and a source of suction. During sampling the impingers are immersed in an ice bath.

9114 REAGENTS. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.

.1 BROMCRESOL GREEN INDICATOR SOLUTION Bromcresol green indicator solution, 0.04 per cent. Mix 0.1 g of dry powder in a mortar with 14.3 ml of 0.01 N sodium hyroxide solution. Dilute to 250 ml with distilled water.

.2 HYDROGEN PEROXIDE SOLUTION (SULFATE FREE). Hydrogen peroxide solution, 3 per cent. Prepare by diluting 30 per cent hydrogen peroxide with distilled water. Store in a dark colored glass-stoppered bottle.

.3 SODIUM HYDROXIDE SOLUTION. Sodium hydroxide solution, approximately 0.2 N. For each liter of solution dissolve 8/9 g of sodium hydroxide pellets (NaOH) in 150 ml to 200 ml of distilled water and dilute to volume. Determine normality to within 0.001 N by standardization against potassium acid phthalate using bromcresol green indicator.

9115 SAMPLING. Add to each of three impingers 100 ml of 3 per cent hydrogen peroxide solution. Connect them with tubing inert to constituents of the sample stream in such a manner that the gas will be pulled from the sampling device at the stack through the impingers, then through the meter. Immerse the impingers in an ice bath. Sample at 0.5 cfm. The sampling time will depend on the concentration of sulfur oxides in the gas stream.

9116 ANALYTICAL PROCEDURE. Rinse each of the absorbers and their connecting tubing into a 500-ml Erlenmeyer flask, using approximately 100 ml of rinse water. Bring to a boil and titrate with standard sodium hydroxide solution, using 4 ml of bromcresol green indicator solution. Titrate to the blue-color end point.

9117 CALCULATION. Calculate the amount of sulfur oxides in the sample gas by the following equation:

$$\text{Sulfur oxides, \% by volume as } SO_2 = \frac{0.0417\,(AN_1)}{V}$$

Where:

$A =$ volume, milliliters, of standard alkali used in the titration.
$N_1 =$ normality of the standard alkali solution.
$V =$ volume of gas sample, cubic feet, at 60° F and 1 atm.

9118 PRECISION. Duplicate results by the same operator on a given sample should not differ by more than 2 percent of the mean.

9119 ALTERNATIVES. Other analytical techniques may be used for the determination of total sulfur oxides, provided that such techniques have been standardized against the prescribed technique.

(9.0) CHAPTER 2 - CHEMICAL PROCEDURE FOR ATMOSPHERIC DETERMINATIONS OF SULFUR DIOXIDE

9210 SCOPE. This method describes the procedure for the determination of SO_2 concentrations in the atmosphere to be used for the field calibration of recording sulfur dioxide instruments.

9211 REAGENTS.

.1 SODIUM TETRACHLOROMERCURATE 0.1 M. Mercuric chloride (0.1 mole, 27.2 gm) and 0.2 mole (11.7 gm) of sodium chloride are dissolved and diluted to one liter.

.2 HYDROCHLORIC ACID-BLEACHED P-ROSANILINE. Dissolve 0.150 grams of p-rosaniline hydrochloride in 1 liter of 10 percent (v/v) hydrochloric acid. Let stand to stabilize for a few hours, preferably overnight, before use. This solution should be a pale yellow with a greenish tint.

.3 FORMALDEHYDE. 0.2%

9212 ANALYTICAL PROCEDURE. Collect the sulfur dioxide from 30-40 liters of air in 10.0 ± 0.1 ml of sodium tetrachloromercurate in a fritted glass bubbler, at a sampling rate not exceeding 5 liters per minute. To the 10.0 ± 0.1 ml sample add 1 ml of acidic p-rosaniline and 1.0 ml of the formaldehyde solution. Treat a 10.0 0.1 ml portion of unexposed sodium tetracloromercurate in the same manner. Allow to stand 20 minutes for full color development. Read in a spectrophotometer at 560 mu (1 cm path length). Read the micrograms of sulfur dioxide from a standard curve prepared by using dilutions of standard sodium metabisulfite in sodium tetrachloromercurate.

9213 STANDARDIZATION. Weigh 400 mg sodium metabisulfite (assay 65.5% as SO_2) and dissolve in one liter of water.

$$400 \text{ mg} \times 0.655/1 = .26 \text{ mg/ml as } SO_2$$

Standardize against 0.01 N I_2. Dilute the standard SO_2 solution 1 → 10. This yields a solution containing 26 micrograms of SO_2 per ml. Add graduated amounts of the dilute standard up to 1 ml to a series of 10 ml flasks and dilute to the mark with the sodium tetrachloromercurate solution. Add 1 ml p-rosaniline dye and 1 ml formaldehyde solution and allow to stand for 20 minutes for full color development. Plot the percent transmittance on semi-log paper vs. the micrograms of SO_2 per aliquot.

9214 CALCULATIONS.

$$\frac{\text{Total micrograms of } SO_2 \text{ in sample}}{2.6 \times \text{vol. of air sample (in liters)}}) = \text{ppm (vol) of } SO_2 \text{ in the air sample.}$$

9215 ALTERNATIVES. Other analytical techniques may be used for atmospheric determinations of sulfur dioxide, provided that such techniques yield results equivalent to those obtained by the techniques prescribed in this Chapter 2, Divison 9.

9216 REFERENCE. West, P. W. and G. C. Gaeke. "Fixation of Sulfur Dioxide as Disulfitomercurate (II) and Subsequent Colorimetric Estimation," Anal. Chem, 28, 1816-19 (Dec., 1956).

(9.0) CHAPTER 3 - DETERMINATION OF SULFUR TRIOXIDE IN SAMPLES TAKEN FROM GAS STREAMS

9310 SCOPE. This method describes a procedure for the determination of SO_2 and H_2SO_4 in exhaust gases. The lower limit of the method is about 1 ppm (vol) of SO_3 for a 20 cubic foot sample.

9311 INTERFERENCES. Particulate sulfates interfere, and should be removed by a glass wool filter maintained at stack temperature. If a significant quantity of sulfuric acid mist is removed by the filter, it shall be included in the final calculation. Ammonia, sulfur dioxide and nitrogen oxides do not interfere.

9312 OUTLINE OF METHOD. SO_3 is absorbed in 80 per cent isopropanol. The sulfate formed is titrated with $BaCl_2$ using Thorin indicator.

9313 APPARATUS. Sampling train shall consist of three Greenburg-Smith impingers, or other adequate absorbing devices, connected in series with tygon or similar tubing, each containing 100 ml 80 per cent isopropanol. These shall be followed by a millipore filter, an empty impinger, a dry meter, and a source of suction. During sampling, the impingers shall be partially immersed in an ice bath.

9314 REAGENTS. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society where such specifications are available; otherwise, use best available grade.

.1 HYDROGEN PEROXIDE SOLUTION (SULFATE FREE). Hydrogen peroxide solution, 3 per cent. Prepare by diluting 30 per cent hydrogen peroxide with distilled water. Store in a dark-colored glass-stoppered bottle.

.2 ISOPROPANOL. 80 per cent by volume. Add 400 ml of the alcohol to 100 ml water. Mix well.

.3 BARIUM CHLORIDE - (0.1000N) - Dissolve 6.100 grams of $BaCl_2 \, 2H_2O$ in 250 ml water. Add 250 ml isopropanol and mix well. Adjust the pH of the solution to 3.0 using 1-4 perchloric acid. Use a pH meter to measure pH.

.4 PERCHLORIC ACID 1 to 4. Add with caution 75 ml water to 25 ml 70 percent perchloric acid. Mix well.

.5 THORIN INDICATOR (0- (2-hydroxy-3,6 disulfo-1 naphthylazo-) benzenearsonic acid disodium salt). 0.2 grams in 100 ml water.

9315 SAMPLING. Connect the sampling train to a probe and sample at approximately 0.5 cfm. The sampling time will depend on the concentration of SO_3 in the gas, but shall not be less than 15 minutes.

9316 ANALYTICAL PROCEDURE. The analytical procedure should commence within 3 hours of the sample collection to minimize oxidation of SO_2. If a delay is anticipated, remove excess SO_2 by bubbling air through the train at 0.1 cfm for 5 minutes. The contents of the impingers are rinsed into a 500 ml volumetric flask with 80 percent isopropanol and diluted to 500 ml with the alcohol. Mix and transfer 25 ml to a 100 ml Erlenmeyer flask. Adjust the pH to 3.0 with 1 to 4 perchloric acid using a pH meter. Add 2 drops of Thorin indicator and titrate with the $BaCl_2$ solution to a salmon-pink end point. Any sulfuric acid collected on the millipore filter shall be included in the results.

9317 CALCULATION. The sulfate equivalence of the $BaCl_2$ solution is checked by titrating against aliquots of standard 0.1000 N sulfuric acid in 80% isopropanol. One ml of 0.1000 N $BaCl_2$ is equivalent to 4.8 mg sulfate-ion.

Milligrams SO_4 = ml $BaCl_2$ x 4.8

Grains of 100% H_2SO_4 per standard dry cubic foot $= \frac{20 \times \text{mg } SO_4}{64.8V}$

Where V = volume of gas sampled, expressed in standard dry cubic feet.

(9.0) CHAPTER 4 - SPECIFICATIONS FOR THE GAS CHROMATOGRAPH TO BE USED FOR DETERMINING HYDROCARBON CONCENTRATIONS IN 4113 CHAPTER 1, DIVISION 4

9410 The gas chromatograph used for the determination of hydrocarbons in connection with this regulation shall consist of an appropriate detection cell and column, contained in a suitable thermostatically controlled heated container, carrier gas and recorder: additional columns of appropriate lengths and compositions shall be used as necessary in each instance to determine whether the total concentration of saturated and unsaturated C_2 to C_6 hydrocarbons exceeds the concentration allowable under 4113, Chapter 1, Division 4.

9411 The determination of hydrocarbons by gas chromatography shall be based upon the following factors:

.1 A mixture of gases is separated into its individual components as the mixture flows through a column containing an inert supporting material which has been wetted with an appropriate high boiling liquid.

.2 The separation is enhanced by a stream of carrier gas which moves the mixture along the column.

.3 The separated components are detected by a suitable detector placed at the end of the column.

.4 The signal generated by the detector as the individual component arrives at the detector is amplified and recorded on a suitable recorder.

.5 The resulting chromatogram presents a continuous plot of detector signal vs. time. Peak readings represent the signal generated by the arrival at the detector at a specific time of a parcel of separated component of a mixture of hydrocarbons.

9412 The instrument shall be capable of accepting gas samples directly by injection or after concentration in a suitable cryogenic bath. The determination of C_2 to C_6 hydrocarbons present in a sample shall be based upon the actual separation of the individual components of a mixture on the analytical column of gas chromatograph with subsequent detection by the detector cell of the instrument.

The detector cell shall be of such nature as to give a minimum response of 0.01 mv on a 1 millivolt recorder (10 inch scale), with 5 micrograms of individual hydrocarbons component. The noise level of the instrument shall be less than 0.005 millivolts (signal to noise ration of 2).

9413 The choice of columns, packing, length of columns, temperature of columns, flow rate of carrier gas, type of detector and type of recorder shall be such as to enable the separation and detection of a mixture of C_2 to C_6 hydrocarbons containing 50 ppm (vol) of such a gas mixture, either by direct injection of an aliquot, or after suitable cryogenic concentration from an adequate volume of sample. Suitable precautions shall be taken to eliminate the interference of water during the analysis.

9414 An instrument using any other components for the gas chromatographic determination of C_2 to C_6 hydrocarbons, but otherwise meeting these specifications shall be acceptable provided that suitable evidence is presented that such an instrument is equally practicable for the analysis of C_2 to C_6 hydrocarbons.

9415 ALTERNATIVES. Other analytical techniques may be used for hydrocarbon analysis, provided that such techniques have been standardized against the prescribed gas chromatographic technique for hydrocarbon determination.

(9.0) CHAPTER 5 - DETERMINATION OF TOTAL CARBONYLS.

9500 This procedure shall be used to determine the concentration of total carbonyls for the purpose of 4113. Any procedure which provides for such determination with accuracy equal to or greater than the prescribed procedure shall be acceptable; provided that the burden of demonstrating such accuracy shall rest upon the person proposing the procedure. (Amended by Resolution 578, dated May 7, 1969).

9510 METHOD SUMMARY. The samples are reacted with a solution of sodium bisulfite to form addition compounds. The excess bisulfite-ion is destroyed with iodine solution. By adjusting the pH of the solution, the addition compounds are decomposed freeing bisulfite-ion equivalent to the aldehydes present in the sample. The liberated bisulfite-ion is then titrated with standard iodine.

9511 SPECIAL COLLECTION APPARATUS FOR SOURCE TESTING. Two Greenburg-Smith impingers, each containing 100 ml of 1% sodium bisulfite solution, are connected in series with tygon tubing. These shall be followed by and coupled to an empty impinger (for meter protection), a dry meter and a source of suction. During sampling the impingers shall be partially immersed in the ice bath. (Amended by Resolution 578, dated May 7, 1969)

9512 COLLECTION REAGENTS: 1% (APPROXIMATE) SODIUM BISULFITE. Dissolve 5 grams of sodium bisulfite ($NaHSO_3$) in 500 ml of water.

9513 ANALYTICAL REAGENTS

.1 1% STARCH. Weigh 1 gram of soluble starch into a 150-ml beaker. Add 1 to 2 ml of water and stir to make a paste. In a separate beaker, heat 100 ml of water to boiling and pour into the paste while stiring. For accurate work the starch solution should be made fresh daily.

.2 0.05 N SODIUM THIOSULFATE. Dissolve 12.5 grams of sodium thiosulfate ($Na_2S_2O_35H_2O$) in 1 liter of freshly boiled and cooled water. Add 0.1 gram of sodium carbonate as a preservative. This will retard the slow change of liter which a solution of thiosulfate normally undergoes. Allow the solution to stand for 24 hours before use. To standardize the thiosulfate proceed as follows: Dry some potassium dichromate (primary-standard grade) in an oven at 110° C for 1 hour. Cool in a desiccator. Weigh 2.452 grams of the dry dichromate into a 1-liter volumetric flask, and dissolve in about 500 ml of water. Make up to volume with water and mix thoroughly. Pipet exactly 25 ml of the solution into a 500 ml Erlenmeyer flask. Pour 25 ml of water into another Erlenmeyer flask for a blank determination. Add 50 ml of water, 10 ml. of concentrated hydrochloric acid, and 3 grams of solid potassium iodide to each flask. Swirl each flask once, cover, and place in the dark for 5 minutes. Dilute the solution in each flask with 200 ml of water and titrate with the 0.05 N sodium thiosulfate solution until the brown color is almost discharged. Add 3 ml of starch indicator and titrate to colorless. Subtract the volume of sodium thiosulfate required for the blank titration from the sample titration. The normality of the sodium thiosulfate solution is:

$$\frac{1.25}{V_t}$$

Where:

V_t = milliliters of sodium thiosulfate used for the titration (blank subtracted).

.3 0.1 N (APPROXIMATE) IODINE. Dissolve 20 to 25 grams of potassium iodide in as little water as possible. Add 12.7 grams of iodine and stir. When dissolved make up to 1 liter with water and store in a dark bottle. This reagent need not be standardized.

.4 0.005 N IODINE. Dilute 50 ml of 0.1 N iodine to 1 liter with water. Standardize daily with the 0.05 N sodium thiosulfate as follows: Pipet 50 ml of the iodine solution into a 250 ml Erlenmeyer flask. Titrate with the 0.05 N sodium thiosulfate until the brown color is almost discharged. Add 3 ml of starch indicator and titrate to colorless. The normality of the iodine solution is:

$$0.02\ V_t\ N_t$$

Where:

V_t = mls of sodium thiosulfate used for the titration.

N_t = exact normality of sodium thiosulfate.

.5 BUFFER SOLUTION. Dissolve 80 grams of anhydrous sodium carbonate in 500 ml of water. Add 20 ml of glacial acetic acid slowly to avoid excessive frothing. Dilute to 1 liter. Adjust the pH to 9.6 (±0.1) with sodium carbonate or acetic acid as required using a pH meter.

9514 COLLECTION OF SAMPLE FOR SOURCE TESTING. Connect the sampling train to a probe and sample at approximately 0.5 to 1.0 cfm. The sampling time will depend on the concentration of carbonyls in the effluent, and shall be not less than 15 minutes. (Amended by Resolution 578, dated May 7, 1969)

9515 ANALYTICAL PROCEDURE. Pipet an aliquot from each of the impingers into separate 250 ml Erlenmeyer flasks. The size of the aliquot will depend on the concentration of carbonyls in the effluent. Add 2 ml of 1% starch solution to each flask. Add 0.1 N iodine dropwise until a dark blue color is produced. Care should be taken to see that all of the sulfur dioxide resulting from the decomposition of bisulfite is removed from the vapor space in the flask as it may cause the end point to fade. This can be conveniently accomplished by blowing a small jet of air into the flask while swirling the contents vigorously for several minutes. Decolorize each solution by adding 0.05 N sodium thiosulfate dropwise. Add 0.005 N iodine to a faint blue end point. Cool thoroughly in an ice bath and add 50 ml of chilled buffer to each flask. Allow to stand in the ice bath for 10 to 15 minutes after the buffer addition. Then titrate the liberated bisulfite in each flask with 0.005 N iodine to the same faint blue end point present before addition of the buffer. Keep the sample chilled in order to avoid a fading end point. Make up a blank using the same volume of $NaHSO_3$ as used in the aliquot taken. Titrate as described for sample, and subtract blank value from sample value. (Amended by Resolution 578, dated May 7, 1969)

9516 REPORTING AND CALCULATIONS FOR SOURCE TESTING. Total carbonyls expressed as ppm CH_2O =

$$\frac{\text{Net Titer (ml)} \quad \dfrac{75 \times \text{normality } KI_3}{0.005} \quad \dfrac{\text{Vol. in impinger (ml)}}{\text{Aliquot taken (ml)}}}{1.2 \times \text{vol. gas sampled (liters)}}$$

Amended by Resolution 578, dated May 7, 1969.

9517 Deleted by Resolution 578, dated May 7, 1969.

9518 Deleted by Resolution 578, dated May 7, 1969.

9519 Deleted by Resolution 578, dated May 7, 1969.

(9.0) CHAPTER 6 - DETERMINATION OF HYDROGEN SULFIDE IN SAMPLES TAKEN FROM GAS STREAMS

9610 SCOPE. This method describes a procedure for the determination of the total H_2S in exhaust gases. (Added by Resolution 635, dated November 5, 1970.)

9611 OUTLINE OF METHOD. The hydrogen sulfide is adsorbed from a gas stream in a solution of cadmium sulfate. The collected sulfides are oxidized by an iodine solution, and the quantity of iodine used is determined by titration with thiosulfate. (Added by Resolution 635, dated November 5, 1970.)

9612 APPARATUS. Sampling train consists of 3 Greenburn-Smith impingers or other adequate absorbing devices, the first of which is empty and the second two containing 100 ml of $CdSO_4$. The impingers are connected in series, followed by a dry meter and a source of suction. During sampling, the impingers are immersed in an ice bath. (Added by Resolution 635, dated November 5, 1970.)

9613 REAGENTS

1. Cadmium Sulfate--Add 11.2 grams to 1 liter of distilled water
2. HCl 6N
3. Standard solution of 0.1 N iodine
4. Standard solution of 0.1 N sodium thiosulfate

(Amended by Resolution 674, dated July 22, 1971.)

9614 SAMPLING. Add to the second and third impingers 100 ml of $CdSO_4$ solution. Connect all three impingers with tubing inert to constituents of the sample stream in such a manner that the gas will be pulled from the sampling device at the stack through the impingers, then through the meter. Immerse the impingers in an ice bath.

Sample at 0.2 cfm. The sampling time will depend on the concentration of H_2S in the gas stream. (Added by Resolution 635, dated November 5, 1970.)

9615 ANALYTICAL PROCEDURE. Determination of hydrogen sulfide: Quantitatively transfer solution and precipitate from the Cd $(SO_4)_2$ impingers into a glass-stoppered 500-ml Erlenmeyer flask. From a 50-ml burette add iodine solution rapidly until an excess is indicated; rapidly add 10 ml of 6N HCl, 1 ml of starch solution and back titrate with 0.1N sodium thiosulfate in the usual fashion. The iodine should be standardized using the same solution (cadmium sulfate) and conditions as above. (Added by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)

9616 CALCULATIONS.

$$\text{mg } H_2S = (\text{ml } KI_3 \times NKI_3) - (\text{ml } Na_2SO_3) \times 17$$

$$\text{ppm } H_2S = \frac{\text{mg } H_2S \times 10^3}{1.39 \times \text{sample volume in liters}}$$

(Added by Resolution 635, dated November 5, 1970.)

9617 Other analytical techniques may be used for the determination of hydrogen sulfide in samples taken from gas streams provided that such techniques yield results equivalent to those obtained by techniques prescribed in this Chapter 6, Division 9. (Added by Resolution 635, dated November 5, 1970.)

(9.0) CHAPTER 7 - DETERMINATION OF HYDROGEN SULFIDE IN ATMOSPHERIC SAMPLES

9710 SCOPE. This method describes the procedure for the determination of H_2S concentrations in the atmosphere to be used for the field calibration of recording H_2S instruments. The method is based on the absorption of sulfides by a solution of Cd $(OH)_2$ containing Stractan, and the subsequent formation of amethylene blue by the addition of N-N dimethyl-p-phenylenediamine. (Added by Resolution 635, dated November 5, 1970.)

9711 REAGENTS. (Added by Resolution 635, dated November 5, 1970.)

.1 Cadmium hydroxide solution: Dissolve 2.7 grams of anhydrous cadmium sulfate, $CdSO_4$, in approximately 100 ml of water. Dissolve 0.3 grams of sodium hydroxide in approximately 25 ml water, add to the cadmium solution and dilute to 1 liter. (Added by Resolution 635, dated November 5, 1970.)

.2 Test amine solution: Dissolve 0.375 grams of N-N dimethyl-p-phenylenediamine monohydrochloride in 100 ml of 1:1 sulfuric acid. (Added by Resolution 635, dated November 5, 1970.)

.3 Ferric chloride solution: Dissolve 100 grams of $FeCl_3 6H_2O$ in enough water to make 100 ml of solution. (Added by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)

.4 Arabinogalactan (Stractan 10): Available from Stein, Hall & Co., Inc., 285 Madison Avenue, New York, N.Y. (Added by Resolution 635, dated November 5, 1970.)

.5 Absorption solution: Add 2 grams of Arabinogalactan to 200 ml of cadmium hydroxide solution. Shake the solution well and use within three days. (Added by Resolution 635, dated November 5, 1970. Smended by Resolution 674, dated July 22, 1971.)

9712 APPARATUS.

1. Midget impinger
2. Source of suction
3. Spectrophotometer
4. Flowmeter or limiting orifice

(Added by Resolution 635, dated November 5, 1970.)

9713 PROCEDURE. Shake the absorption solution well and pipet 10 mls into midget impingers. Take air samples at 2 liters/min. for 30 minutes. Return collected samples to the laboratory and analyze within 24 hours. To the impinger, add 0.3 ml of amine test solution and mix well to dissolve all the cadmium hydroxide. Then add one drop of ferric chloride solution and mix well. Transfer to a 25 ml graduated test tube and bring to a total of 10.5 ml with distilled water. Allow to stand for 30 minutes before reading. A blank containing all the reagents should be run along with the samples.

Set the spectrophotometer at 670 mu and adjust with the blank to 100% transmission. Take readings of samples, and from a standard curve obtain micrograms of H_2S. (Added by Resolution 635, dated November 5, 1970.)

9714 PREPARATION OF STANDARD CURVE. Dissolve 0.71 gm of $Na_2S.9H_2O$ in 1 liter of distilled water. Standardize, using standard solutions of iodine and thiosulfate. Make proper dilutions with absorption solution so as to obtain a solution containing 1 microgram H_2S/ml.

Add 0,2,4,6,8 and 10 micrograms of H_2S standard respectively to sufficient volumes of absorption solution to make 10 ml in each test tube. Add 0.3 ml amine solution and mix well. Add one drop of ferric chloride solution and mix well. Allow 30 minutes for color development. Set spectrophotometer at 570 mu and adjust to 100% transmission with the 0 microgram H_2S sample. Take respective readings and make a plot of % transmission vs. microgram H_2S to obtain the standard curve. (Added by Resolution 635, dated November 5, 1970.)

9715 CALCULATION.

$$\text{ppb } H_2S = \frac{\text{Microgram } H_2S \text{ from curve} \times 10^3}{\text{Total sample volume (liters)} \times 1.4}$$

(Added by Resolution 635, dated November 5, 1970.)

9716 ALTERNATIVES. Other analytical techniques may be used for atmospheric determination of hydrogen sulfide, provided that such techniques yield results equivalent to those obtained by the techniques prescribed in this Chapter 7, Division 9. (Added by Resolution 635, dated November 5, 1970.)

(2.0) DIVISION 10
NEW AND EXPANDED OPERATIONS

(1.0) CHAPTER 1 - DEFINITIONS

10100 through 10105
(Added by Resolution 635, dated November 5, 1970, deleted by Resolution 635, dated November 5, 1970.)

(2.0) CHAPTER 2 - NEW LIMITATIONS - GENERAL LIMITATIONS AND REQUIREMENTS

10200 through 10203.1

(Added by Resolution 635, dated November 5, 1970, deleted by Resolution 635, dated November 5, 1970.)

(51.9) CHAPTER 3 - INCINERATION AND SALVAGE OPERATIONS

10204 through 10206

(Added by Resolution 635, dated November 5, 1970, deleted by Resolution 635, dated November 5, 1970.)

(51.21) CHAPTER 4 - HEAT TRANSFER OPERATIONS

10207 through 10208

(Added by Resolution 635, dated November 5, 1970, deleted by Resolution 635, dated November 5, 1970.)

(51.21) CHAPTER 5 - GENERAL COMBUSTION AND GENERAL OPERATIONS

10209 through 10213.7

(Added by Resolution 635, dated November 5, 1970, deleted by Resolution 635, dated November 5, 1970.)

NOTE

By action of the Board of Directors, Division 10 was added to apply to New and Expanded Operations on November 5, 1970. One year following the date of enactment, Division 10 is repealed since its provisions become applicable to all sources as of that date. 10204.3, 10207.4 and 10209.3 were not officially repealed through Resolution 635 due to a drafting error but the intention of the Board of Directors to repeal the entire Division was clear and it is anticipated that official action will be taken prior to November 5, 1971.

(50.2)

DIVISION 11
HYDROGEN SULFIDE

11100 HYDROGEN SULFIDE. (Added by Resolution 635, dated November 5, 1970.)

11101 No person shall cause, let, permit, suffer or allow any emission of hydrogen sulfide which results in ground level concentrations of hydrogen sulfide at any given point in excess of the following concentrations: 0.06 ppm (vol) averaged over 3 consecutive minutes or 0.03 ppm (vol) averaged over 60 consecutive minutes in any 24-hour period from midnight to the next suceeding midnight. 11101 shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point of any such concentration, is controlled by the person responsible for such emission. (Added by Resolution 635, dated November 5, 1970. Amended by Resolution 674, dated July 22, 1971.)

11102 Sampling of exhaust gases for hydrogen sulfide from Type A emission points shall follow the techniques prescribed in Division 9, Chapter 6, and sampling of exhaust gases for hydrogen sulfide from Type B emission points shall follow the techniques prescribed in Division 9, Chapter 7, or the Control Officer may require continuous monitoring in accordance with 3210.1. Area monitoring of H_2S gas shall be according to the procedure outlined in Division 8, Chapter 8. (Added by Resolution 635, dated November 5, 1970.)

.1 The person responsible for the emission of H_2S gas, which is or may be in excess of the limitations of 11101, shall notify the control officer in writing of the location of all significant emission points, the location of the monitoring stations specified in 11102.2 and 11102.3, and the nature of the source operations related to each such emission. (Added by Resolution 635, dated November 5, 1970.)

.2 Such person shall provide at least three recording H_2S monitoring stations located in the area surrounding the source, which stations shall be operated in accordance with the specifications of Chapter 8, Divison 8. (Added by esolution 635, dated November 5, 1970.)

.3 Such person shall provide at least one recording meteorological station equipped to record wind speed and wind direction. (Added by Resolution 635, dated November 5, 1970.)

.4 Such person shall provide the necessary care and maintenance services so that the instruments will function properly and adequately record H_2S exposures in the area. (Added by Resolution 635, dated November 5, 1970.)

.5 Such person shall provide to the control officer a summary of the data obtained from such instruments during each calender month. Such summary shall be in such form and detail as will show the degree of compliance with 11101, and the time, location, extent, and duration of any recorded violation of the provisions of 11101; shall include data giving the total mass rate of emission of H_2S from the emission points specified in 11102.1, and detailed report of instrument performance and maintenance; and shall be submitted within the calendar month immediately succeeding the recording of the data. (Added by Resolution 635, dated November 5, 1970.)

.6 Such person shall keep for a period of at least two years all records gathered as a result of his 11102, and shall make these available to the control officer at his request. (Added by Resolution 635, dated November 5, 1970.)

.7 Such person shall examine at the time of each instrument maintenance check and in any case at intervals of no greater than every seven days instrument records taken pursuant to the requirements of this 11102 to determine compliance with 11101. Any recorded violation of 11101 shall be reported to the control officer within the next normal working day after such examination (Added by Resolution 635, dated November 5, 1970.)

.8 Whenever the records indicate that a violation of 11101 has occurred the person responsible for such emission must furnish evidence that proper action has been taken to prevent recurrence, or a violation of 11101 will be deemed to have occurred. When instrument records are not adequate to show compliance with 11101, the control officer may specify the schedule to be followed for producing a satisfactory record history. (Added by Resolution 635, dated November 5, 1970.)

(50.7) LEAD REGULATION

DIVISION 12

(2.0) CHAPTER 1 - GENERAL LIMITATIONS

12110 No person shall cause, let, permit, suffer, or allow any emission of lead, or any compound of lead calculated as lead, that will result in a ground level concentration in excess of 1.0 ug/m^3 averaged over 24 hours. Emission limitations shall be determined by use of formulas 4.1 and 5.13, and from workbook figures 3-3 and 3-9, in "Workbook of Atmospheric Dispersion Estimates," by D. Bruce Turner, Public Health Service Publication No. 999-AP-26, Revised 1969, published by the U. S. Department of Health, Education and Welfare. In using said equations and figures, a neutral or "D" stability category shall be assumed, a wind shall be assumed that remains throughout the averaging period directed within a 22.5° sector of the compass rose at an average speed of two meters per second, and an ambient air temperature of 293°K shall be assumed.

12111 Any person responsible for the emission of lead may elect to be regulated by the requirements of 12111 through 12111.7 instead of 12110. Such election shall be made by notifying the Control Officer in writing and complying with all the requirements of 12111 through 12111.7.

.1 No person shall cause, let, permit, suffer, or allow any emission of lead resulting in ground level concentrations in excess of 1.0 μg/m^3 above the background level, averaged over 30 days, as determined in accordance with Chapter 2, Division 12.

Background level shall be determined as described in 12214. This 12111.1 shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property from the emission point to the point of any such concentration is controlled by the person responsible for such emission.

.2 The person responsible for emissions of lead who has elected to be regulated by 12111 through 12111.7 shall provide, installed, and maintain not less than four directionally controlled high-volume samplers located in the area surrounding the source. Samplers shall be positioned and operated and samples shall be analyzed for lead content in accordance with Chapter 2, Division 12. Additional samples may be required by the Control Officer to adequately determine ground level concentrations of lead.

.3 Such person shall provide at least one recording meteorological station equipped to record wind speed and wind direction, and positioned and operated in accordance with the specifications of Chapter 2, Division 12.

.4 Such person shall provide necessary care and maintenance so that the instruments and samplers will function properly and adequately record the lead exposures in the area.

.5 Such person shall provide to the Control Officer, during each calendar month, a summary of the data obtained from such instruments and samplers, prepared in accordance with the specifications of Chapter 1, Division 12.

.6 Such person shall keep all records obtained as a result of Chapter 1, Division 12, for a period of at least two years, and shall make them available to the Control Officer at his request.

.7 Such person shall provide to the Control Officer, upon prior notification by him, high-volume samples for analysis.

12112 Upon the observation within any 30-day period of any ground level concentration in excess of 1.0/ug/m^3 above the background level as determined by 12111 through 12111.7, and averaged over 30 days as determined in accordance with Chapter 2, Division 12, emission of lead shall thereafter meet the requirements of 12110.

12113 Notwithstanding any other limitations of this Division 12, no person shall cause, let, permit, suffer, or allow the emission of lead, or any compound of lead calculated as lead, from any emission point in excess of 15 pounds per day.

CHAPTER 2

12210 SCOPE. The procedure outlines the techniques to be used for atmospheric sampling of ground level lead concentrations in order to fulfill requirements of 12111 through 12111.7.

12211 OUTLINE OF PROCEDURE. Lead concentrations in the atmosphere at ground level shall be determined by directionally controlled operation of high-volume samplers and continuously operated meteorological instruments so located with respect to each major source that the lead concentrations in that area will be properly measured.

12212 INSTRUMENT SPECIFICATION. High volume samplers shall be fitted with control device which will cause the sampler to operate only during those periods when the ambient airflow to the sampler is from a specified sector, as described in the "Journal of the Air Pollution Control Association," Volume 19, pages 236-238, 1969. Such instruments shall be sufficiently sensitive to record wind direction and speed of wind at wind speeds of two miles per hour.

12213 INSTRUMENT POSITIONING. The high-volume samplers will be positioned in pairs. One pair shall be positioned upwind and downwind of the emission point along the vector of the most frequent wind direction, determined on the basis of a wind rose as described in "Some Applications of Statistics to Meteorology," by Hans Panofsky and Glenn Birar, Mineral Industires Extension Service, Pennsylvania State University, pages 15-16, 1958. A second pair shall be positioned upwind and downwind of the emission point along the vector of the next most frequent wind direction, determined on the aasis of a wind rose as described above. The primary and secondary directions shall be determined separately for each of two seasons, November through April and May through October inclusive. Samplers shall be positioned in either of the following methods: (1) in two sets of four, with one set of four for the months of November through April and one set of four for the months of May through October; or (2) In one set of four samplers that may be moved on November first and May first of each year. Samplers shall be positioned at a distance from the emission point that is as close as possible to the distance at which maximum ground level concentrations are predicted by diffusion analysis to occur most frequently. Positioning of samplers shall be determined in consultation with the Control Officer, but in no case shall the location of a sampler be closer to the emission point than the edge of the perperty on which the emission occurs. The meteorological instruments shall be positioned at a location which is as close as possible to the emission point and which also provides the instrument with a reasonably unobstructed exposure to the flow of air. Positioning of the meteorological instruments shall be determined in consultation with the Control Officer.

12214 INSTRUMENT OPERATION. At each high-volume sampling location, one of the samplers shall be operated to sample background concentrations and the other sampler to sample concentrations influenced by the source. Background concentrations will be assumed to exist whenever the difference between wind direction and the direction from sampling site to source is greater than 22.5°. Concentrations will be assumed to be influenced by the source whenever said difference in directions is 22.5° or less. Directional controls shall be designed to minimize sensitivity to short period wind gusts. In addition to the above provisions, samplers shall be operated and samples shall be obtained in accordance with the specifications given in the Air Pollution Control Association Committee TR-2, Method APM-2.5, published in the "Journal of the Air Pollution Control Association," Volume 17, No. 1, pages 17-25, January 1967. High-volume samplers shall be operated at least every third day for a period of 24 hours, beginning at 10:00 PST, and all samplers shall be operated concurrently. Meteorological instruments shall be operated continuously.

12215 ANALYSIS OF SAMPLES FOR LEAD. Lead shall be analyzed on the high-volume filters by appropriate preparation of the filter substrate and atomic absorption analysis or any other equivalent analytical procedure.

12216 ANALYSIS OF DATA. After ten days of sampling have been completed, arithmetic means of lead concentration shall be computed from all samples obtained during that period. Two separate means shall be computed, one for all the background samples and one for all samples influenced by the source. All means shall be running means, updated at each subsequent 24-hour sample. When the means of the concentrations influenced by the source exceeds the mean of the background concentrations by more than 1.0 ug/m^3 over the same 30-day period, a violation shall be deemed to have occurred and the limitations of 12110 shall thereafter be met.

(3.0)

DIVISION 13
PERMITS

1300 PERMITS. The effective date of this Division 13 shall be on July 1, 1972.

1301 AUTHORITY TO CONSTRUCT. No person shall construct any facitlity or building, or erect, alter, or replace any article, machine, equipment or other contrivance, the use of which may cause the emission of air contaminants, or the use of which may eliminate, reduce or control the emission of air contaminants unless he shall first have obtained written authorization for such construction, erection, alteration or replacement from the Air Pollution Control Officer.

1302 AUTHORITY TO OPERATE. No person shall operate any facility or building, or any article, machine, equipment or other contrivance, the use of which may cause the emission of air contaminants, or the use of which may eliminate, reduce, or control the emission of air contaminants for which an authority to construct is required unless he shall first have obtained written authorization for such operation from the Air Pollution Control Officer.

.1 An authorization to construct or operate shall not exempt any person from meeting all local, state or federal requirements for such construction or operation, nor shall it exempt any person from meeting all Regulations of the District.

.2 AUTHORITY TO OPERATE --FUEL TANKS AND PUMPS FOR SERVICE OF MOTOR VEHICLES. After October 1, 1974, no person shall operate any gasoline station, or fuel tank, or pump for the servicing of motor vehicles, unless he shall first have obtained written authorization for such operation from the Air Pollution Control Officer. The Air Pollution Control Officer shall not deny authorization for such operation if a vapor recovery system for bulk fuel delivery is installed which reduces emissions from that source by at least 90%, and the permit is further conditioned upon the installation of a vapor recovery system for deliver of fuel to motor vehicle tanks which reduces emissions from that source by at least 90%, upon notification by the Air Pollution Control Officer that such a system is or can be made commercially available, and in any event not later than January 1, 1976. The piping and other equipment required for the vapor recovery system for delivery of fuel to motor vehicle tanks, with the exception of the nozzle shall be installed prior to July 1, 1975.

If it is demonstrated to the satisfaction of the Air Pollution Control Officer that it is impractical to comply with the requirements of 90% vapor recovery for delivery of fuel to motor vehicle tanks as a result of vehicle fill neck configuration, location, or other design features for a class of vehicles, the provisions of this section for 90% vapor recovery for delivery of fuel to vehicle tanks shall not apply to such class of vehicles. However, in no case shall such design features exempt any gasoline dispensing facility servicing motor vehicles from installing and using a vapor recovery system required by this section. (Adopted February 15, 1973; amended December 20, 1973; June 27, 1974; November 23, 1974.)

.21 a) No person shall store gasoline in or otherwise use or operate any gasoline delivery vehicle used for the delivery of gasoline for the servicing of motor vehicles unless he shall first have obtained written authorization for such operation from the Air Pollution Control Officer. The Air Pollution Control Officer shall not deny authorization for such use or operation if such vehicle is designed and maintained to be vapor-tight and if such vehicle is equipped with a system to recover at least 90% of the gasoline vapors displaced during the transfer of gasoline from the vehicle to storage tanks used to service motor vehicles. Any person who delivers or authorizes the delivery of gasoline to storage tanks without the proper connection of the vapor recovery system to the storage tank shall be deemed to be in violation of this Section.

b) Gasoline delivery vehicles serviced solely from bulk terminals of less than 25, 000 gallons per day throughout are exempted from the requirements of 1302.21 (a).

.22 The Air Pollution Control Officer shall not deny an authority to operate for containers, reservoirs or tanks used exclusively for:

(a) The storage of gasoline having a capacity equal to or less than 2000 gallons and with a throughput of 6000 gallons per month or less.

(b) The storage of gasoline serviced from bulk terminals of less than 25,000 gallons per day throughput. Such tanks shall comply with the vapor recovery requirements of 1302.2 within 20 days of a change in service which results in deliveries from bulk terminals of 25,000 gallons per day throughput or more.

(c) The storage of gasoline in structures which the Air Pollution Control Officer has determined that severe and unusual construction problems would prevent the installation of equipment ot meet the vapor recovery requirements specified in Section 1302.2. Such unusual construction problems include but are not limited to tanks located in the basements of office buildings or under roadways.

(d) The storage of gasoline and whose operation will cease on or before July 1, 1975 upon presentation of adequate supporting documents to the Air Pollution Control Officer. This exemption from the vapor recovery requirements specified in 1302.2 shall not apply if the operation ceases prior to July 1, 1975 and recommences operation after July 1, 1975. (adopted June 12, 1974; June 27, 1974.)

.23 All vapor return and/or vapor recovery systems used to coply with Sections 1302.2, 1302.21 and 1302.22 are not exempted from compliance with any safety, fire, weights and measures or other applicable state, local or federal codes or regulations.

1303 TRANSFER. An authority to construct, erect, alter or replace, or an authority to operate, shall not be transferable from one location to another. An authority to construct, erect, alter or replace, or an authority to operate, shall not be transferable from one person to another without prior written notification to the Air Pollution Control Officer.

1304 APPLICATIONS. Every application for an authority to construct, erect, alter or replace, or an authority to operate, shall be submitted to the Air Pollution Control Officer on a form specified, and contain all of the information required by him.

1305 EXPIRATION. An authority to construct, erect, alter or replace, or an authority to operate, shall expire two years after the date of issuance, unless use of such authority has been substantially commenced.

1306 ACTION OF APPLICATIONS. The Air Pollution Control Officer shall act as soon as possible, but not later than 60 days unless extended by written consent of the applicant, on an application for authority to construct, erect, alter or replace, or authority to operate, and shall notify the applicant in writing of his approval, condiitional approval, or denial. An applicant dissatisfied with the decision of the Air Pollution Control Officer may seek an order from the Hearing Board modifying or reversing such action pursuant to Article 12, Chapter 2.5, Division 20, of the Health and Safety Code.

1307 DENIAL - FAILURE TO MEET EMISSION REGULATIONS. The Air Pollution Control Officer shall deny an authority to construct, erect, alter or replace, if the facility, building, article, machine, equipment or other contrivance, the use of which may cause the emission of air contaminants, or the use of which may eliminate, reduce or control the emission of air contaminants, when operated, will not comply with the emission regulations of the District.

1308 DENIAL - DEGRADATION OF AIR QUALITY. The Air Polltuion Control Officer, after considering all information available about existing air quality, meteorological information that may affect the air quality, information about the emission of air contaminants from the proposed new source operation, shall deny an authority to construct, erect, alter, or replace any facility, building, article, machine, equipment or other contrivance, or an authority to operate any facility, building, article, machine, equipment or other contrivance, the use of which may cause the emission of air contaminants if the operation of such would cause any air quality standard adopted by the California Air Resources Board or the Environmental Protection Agency to be exceeded in the vicinity in which it is proposed to be located or elsewhere in the Bay Area Air Pollution Control District.

1309 DENIAL- AIR QUALITY STANDARDS EXCEEDED IN THE VICINITY. The Air Pollution Control Officer, after considering all information available about existing air qualtiy, meteorological information that may affect the air quality, information about the emission of air contaminants from existing source operations, information about the emission of air contaminants from the proposed new source operation, shall deny an authority to construct, erect, alter, or replace any facility, building, article, machine, equipment or other contrivance, or an authority to operate any facility, building, article, machine, equipment or other contrivance, the use of which may cause the emission of air contaminants if any air quality standard adopted by the California Air Resources Board or the Environmental Protection Agency for any air Contaminant from the proposed new source is exceeded in the vicinity in which it is proposed to be located.

1310 DENIAL - AUTHORITY TO OPERATE. The Air Pollution Contol Officer shall deny an authority to operate any facility or building, article, machine, equipment or other contrivance for which an authority to construct or operate is required, if it is not constructed substantially in conformance with the authority to construct, or if the use or operation according to design standard does not comply with the regulations of the Board.

1311 IMPROVEMENT BY REPLACEMENT - NOT CAUSE FOR DENIAL. The Air Pollution Control Officer shall not deny an authority to construct, erect, alter or replace, or an authority to operate, any facility, building, article, machine, equipment or other contrivance if the facility, building, article, machine, equipment or other contrivance is a replacement for any existing facility, building, article, machine, equipment or other contrivance will when used or operated result in the emission of less of each air contaminant than the use or operation of the original such facility, building, article, machine, equipment or other contrivance for which it is a replacement. This Section 1311 shall apply only if the original emissions were in compliance with District regulations.

1312 DESIGN - NOT CAUSE FOR DENIAL. The Air Pollution Control Officer shall not deny an authority to construct, erect, alter or replace, or an authority to operate, any facility, building, article, machine, equipment or other contrivance solely because of the design of the equipment, type of construction, or particular method to be used in reducing the release of air contaminants.

1313 POSTING OF AUTHORITY TO OPERATE. Every permit to operate shall be posted on or near the equipment for which the permit has been issued in such manner as to be clearly visible and accessible. If the facility, building, article, machine, equipment or other contrivance is so constructed or operated that the permit to operate cannot be so placed, it shall be mounted so as to be clearly visible and accessible within 25 feet of the facility, building, article, machine, equipment or other contrivance, and readily available at all times for inspection.

1314 SUSPENSION. The Air Pollution Control Officer shall suspend or revoke a permit to operate any facility, building, article, machine, equipment, or other contrivance, if the operation causes the emission of air contaminants in violation of any regulation of the Board. The permit to operate may be reinstated by the Air Pollution Control Officer if the person responsible for the emissions shows that corrective action has been taken and that emissions meet all the regulations of the Board. Any person considering himself aggrieved by any action of the Air Pollution Control Officer under this section may seek an order from the Hearing Board modifying or reversing such action pursuant to Article 12, Chapter 2.5, Division 20, of the Health and Safety Code.

1315 APPLICATION. The following uses and operations, but not limited to the following uses and operations, are required to meet the requirements of all regulations of the District and are required to comply with all of the requirements of this Division 13:

1. All stationary sources causing emissions in excess of 100 tons per year of any pollutant for which there is a National or California State air quality standard.

2. Without regard to the amount of emissions, stationary sources listed in Appendix C of the Federal Register, Saturday, August 14, 1971, Volume 36, Number 158, Part II, Page 15497.

3. Any space heating operation of a capacity of greater than 10 million BTU/hour heat input.

4. Any conflict between Section 1315 and Section 1316 shall be interpreted so that this Section 1315 shall prevail.

1316 EXEMPTIONS. The following uses and operations are required to meet the requirement of all regulations of the Bay Area Air Pollution Control District except that an authorization for construction, erection, alteration, or replacement or authorization to operate, is not required for the following. These exemptions shall terminate 4 years from the date of adoption of this regulation:

A. The following operations:

   1. Single family dwellings.

   2. Multiple family dwellings, hotels and motels.

   3. Office and commercial buildings of less than 10 million BTU/hour hear input for space heating.

   4. Road construction, widening and rerouting.

   5. Restaurants and other establishments for the purpose of preparing food for human consumption.

   6. Structural changes which do not change the qualtiy, nature or quantity of air contaminant emissions.

B. The following equipment:

   1. Comfort air conditioning or comfort ventilating systems which are not designed to remove air contaminants generated by or released from specific units of equipment.

2. Refrigeration units except those used as, or in conjunction with, air pollution control equipment.

3. Internal combustion engines.

4. Vacuum producing devices in laboratory operations or which are used exclusively in connection with other equipment which is exempted by this rule, and vacuum producing devices which do not remove or convey air contaminants from another source.

5. Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets from barometric condensers.

6. Equipment used exclusively for steam cleaning.

7. Presses used exclusively for extruding metals, minerals, plastics or wood.

8. Procelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enameling drying ovens.

9. Presses used for the curing of rubber products and plastic products.

10. Equipment used for hydraulic or hydrostatic testing.

11. All sheet-fed paper printing presses and all other printing presses using exclusively inks containing no organic solvents, diluents or thinners.

12. Equipment used for buffing, carving, cutting, drilling, grinding, machining, routing, sanding, sawing, surface grinding or turning of fiberboard, masonry, carbon or graphite.

13. Tanks, vessels and pumping equipment used exclusively for the storage or dispensing of fresh commercial or purer grades of:

    (a) Sulfuric acid with an acid strength of 99 per cent or less by weight.

    (b) Phosphoric acid with an acid strenght of 99 per cent or less by weight.

    (c) Nitric acid with an acid strength of 70 per cent or less by weight.

14. Ovens used exclusively for the curing of plastics which are concurrently being vacuum held to a mold, or for the softening and annealing of plastics.

15. Equipment used exclusively for the dyeing or stripping (bleaching) or textiles where no organic solvents, diluents or thinners are used.

16. Equipment used exclusively to mill or grind coatings and molding compounds in a paste form.

17. Crucible type or pot type furnaces with a brimful capacity of less than 450 cubic inches of any molten metal.

18. Equipment used exclusively for the melting or applying of wax where no organic solvents, diluents or thinners are used.

19. Equipment used exclusively for bonding lining to brake shoes.

20. Lint traps used exclusively in conjunction with dry cleaning tumblers.

21. Equipment used exclusively to compress or hold dry natural gas.

22. Tumblers used for the cleaning or deburring of metal products without abrasive blasting.

23. Shell core and shell-mold manufacturing machines.

24. Molds used for the casting of metals.

25. Abrasive blast cabinet-dust filter combination units where the dust filter and blasting cabinet are built integrally and mounted on the same framework.

26. Batch mixers of 5 cubic feet rated working capacity or less.

27. Equipment used exclusively for the packaging of lubricants or greases.

28. Equipment used exclusively for the manufacture of water emulsions of waxes, greases or oils.

29. Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.

30. Equipment used exclusively for conveying and storing plastic pellets.

31. Equipment used exclusively for the mixing and blending of materials at ambient temperature to make water based adhesives.

32. Smokehouses in which the maximum horizontal inside cross sectional area does not exceed 20 square feet.

33. Platen presses used for laminating.

34. Orchard heaters.

C. The following equipment or any exhaust system or collector serving exclusively such equipment:

1. Blast cleaning equipment using a suspension of abrasive in water.

2. Ovens, mixers and blenders used in bakeries where the products are edible and intended for human consumption.

3. Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity or any combination thereof.

4. Laboratory equipment used exclusively for chemical or physical analyses and bench scale laboratory equipment.

5. Equipment used for inspection of metal products.

6. Confection cookers where the products are edible and intended for human consumption.

7. Equipment used exclusively for forging, pressing, rolling or drawing of metals or for heating metals immediately prior to forging, pressing, rolling or drawing.

8. Die casting machines.

9. Atmosphere generators used in connection with metal heat treating processes.

10. Photographic process equipment by which an image is reporduced upon material sensitized to radiant energy.

11. Brazing, soldering or welding equipment.

12. Equipment used exclusively for the sintering of glass or metals.

13. Equipment used for buffing or polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding or turning of ceramic artwork, ceramic precision parts, leather, metals, plastics or rubber.

14. Equipment used for carving, cutting, drilling, grinding, planning, routing, sanding, sawing, shredding or turning of wood or the pressing or storing of sawdust, wood chips or wood shavings.

15. Equipment used for surface preparation, cleaning or stripping of metals by use of aqueous solutions.

16. Equipment used for washing or drying products fabricated from metal or glass, provided that no volatile organic materials are used in the process and that no oil or solid fuel is burned.

17. Laundry dryers, extractors or tumblers used for fabrics cleaned only with water solutions of bleach or detergents.

18. Containers, reservoirs, or tanks used exclusively for electrolytic plating with, or electrolytic polishing of, or electrolytic stripping of the following metals: brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals.

19. Foundry sand mold forming equipment to which no heat is applied.

20. Ovens used exclusively for curing potting materials or castings made with epoxy resins.

21. Equipment used to liquefy or separate oxygen, nitrogen or the rare gasses from the air.

22. Equipment used for compression molding and injection molding of plastics.

23. Mixers for rubber or plastics where no material in powder form is added and no organic solvents, diluents, or thinners are used.

24. Equipment used exclusively to package pharmaceuticals and cosmetics or to coat pharmaceutical tablets.

25. Equipment used exclusively to grind, blend or package tea, cocoa, spices or roasted coffee.

26. Roll mills or calenders for rubber or plastics.

D. Steam generators, steam superheaters, water boilers, water heaters and closed heat transfer systems of less than 10 million BTU per hour capacity that are fired exclusively with one of the following:

1. Natural gas.
2. Liquefied petroleum gas.
3. A combination of natural gas and liquefied petroleum gas.

E. Natural draft hoods, natural draft stacks or natural draft ventilators.

F. Containers, reservoirs, or tanks used exclusively for:

1. Dipping operations for coating objects with oils, waxes or greases where no organic solvents, diluents or thinners are used.
2. Dipping operations for applying coatings of natural or synthetic resins which contain no organic solvents.
3. Storage of liquefied gases.
4. Unheated storage of organic materials with an initial boiling point of 300°F. or greater.
5. The storage of fuel oils with a gravity of 25° API or lower.
6. The storage of lubricating oils.
7. The storage of fuel oils with a gravity of 40° API or lower and having a capacity of 10,000 gallons or less.
8. The storage of organic liquids normally used as solvents, diluents or thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins or other surface coatings, and having a capacity of 600 gallons or less.
9. The storage of liquid soaps, liquid detergents, tallow, or vegetable oils, waxes or wax emulstions.
10. The storage of asphalt.
11. Unheated solvent dispensing containers, unheated non-conveyorized solvent rinsing containers or unheated non-converyorized coating dip tanks of 100 gallons capacity or less.

12. Etching (does not include chemical milling).

13. The storage of gasoline having a capacity of less than 250 gallons.

G. Equipment used exclusively for heat treating glass or metals, or used exclusively for case hardening, carburizing, cyaniding, nitridizing, carbonitriding, siliconizing or diffusion treating of metal objects.

H. Crucible furnaces, pot furnaces or induction furnaces, with a capacity of 1000 pounds or less each, in which no sweating or distilling is conducted and from which only the following metals are poured or in which only the following metals are held in a molten state:

1. Aluminum or any alloy containing over 50 per cent aluminum.

2. Magnesium or any alloy containing over 50 per cent magnesium.

3. Lead or any alloy containing over 50 per cent lead.

4. Tin or any alloy containing over 50 per cent tin.

5. Zinc or any alloy contining over 50 per cent zinc.

6. Copper.

7. Procious metals.

I. Vacuum cleaning system used exclusively for industrial, commercial or residential housekeeping purposes.

J. Repairs or maitenance not involving structural changes to any equipment for which a permit has been granted.

K. Identical replacements in whole or in part of any article, machine, equipment or other contrivance where a permit to operate had previously been granted for such equipment.

(50.3)

DIVISION 14
NITROGEN OXIDES

141100 NITROGEN OXIDES

141111 No person shall cause, let, permit, suffer, or allow the emission of nitrogen oxides, calculated as nitrogen dioxide and calculated as if there were 3% oxygen in the exhaust gas stream, from any new or modified heat transfer operation, designed for a maximum heat input of more than 250,000,000 BTU per hour or greater in excess of:

.1 125 ppm when gaseous fossil fuel is burned;

.2 225 ppm when liquid fossil fuel is burned.

.3 When different fossil fuels are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x\ (125) + y\ (225)}{x + y} = \text{allowable emission}$$

x is the percent of total heat input derived from gaseous fossil fuel, and

y is the percent of total heat input derived from liquid fossil fuel.

.4 No person shall cause, let, permit, suffer, or allow the emission of nitrogen oxides, calculated as nitrogen dioxide and calculated as if there were 3% oxygen in the exhaust gas stream, from any heat transfer operation, designed for a maximum heat input of 1750,000,000 BTU per hour or greater in excess of:

.5 175 ppm when gaseous fossil fuel is burned;

.6 300 ppm when liquid fossil fuel is burned.

.7 When different fossil fueld are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

$$\frac{x\ (175) + y\ (300)}{x + y} + \text{allowable emission}$$

x is the percent of total heat input derived from gaseous fossil fuel, and

y is the percent of total heat input derived from liquid fossil fuel.

.8 Section 141111.4 through 141111.7 shall be in force and take effect on April 19, 1975.

141112 A new heat transfer operation means any such operation that had not commenced on the effective date of this section. A modified heat transfer operation means an operation in which there has been any physical change in, or change in the method of operation of, a source operation which increases the amount of nitrogen oxides previously emitted, except that:

.1 Routine maintenance, repair, and replacement shall not be considered physical changes, and

.2 The following shall not be considered a change in the method of operation: (a) an increase in the production rate, if such increase does not exceed the operating design capacity of the operation; (b) an increase in hours of operation; (c) use of an alternative fuel if, prior to the date on which this section becomes effective, the operation was designed to accommodate such alternative fuel.

141113 "Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a binding agreement or contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

141114 Determination of nitrogen oxides.

141115 SCOPE. This method describes a procedure for the determination of nitrogen oxides in exhaust gases.

141116 OUTLINE OF METHOD. The method is based on the absorption of nitric oxide and nitrogen dioxide in alkaline permanganate bubblers fitted with semi-fine frits. The formed nitrite and nitrate ions are determined by first converting the nitrite formed during the collection to nitrate. The total nitrate is then reduced to nitrite, which is determined by diazotation and coupling to form a red dye.

141117 REAGENTS.

1. Absorption Solution: Dissolve 40 gms of potassium permanganate and 20 gms of sodium hydroxide in disti-led water and dilut to 1 liter.

2. Oxalic Acid: 8% solution in distilled water.

3. Sulfuric Acid: 0.8 N: dilute 22.4 ml of conc. sulfuric acid to 1 liter with distilled water.

4. Reducing and Color Reagent: Nitra Ver IV, catalog No 2013, Hach Chemical Co., Ames, Iowa.

141118 SAMPLE COLLECTION. Sampling train consists of 3 Greenburg-Smith impingers modified with semi-fine frits of approximately 70 porosity. Each impinger shall contain 150 ml of absorbing solution. The impingers are connected in series, followed by a dry meter and a source of suction. During sampling the impingers are immersed in an ice bath. Sampling rate shall be between 0.5 and 1.0 liters per minute. Sampling time shall be for 20-40 minutes, depending on the contration of nitrogen oxides in the sample stream.

141119 SAMPLE ANALYSIS: Measure total liquid volume collected in the impingers. Prepare an aliquot for analysis containing 10-100 ugm of nitrite. The aliquot may require dilution with unreacted absorption solution or may be used directly. The aliquot should not exceed 7.0 ml. If preferred, all three impingers may be combined to form a composite, thereby requiring only a single analysis.

Transfer aliquot to a graduated 50 ml erlenmeyer flask with screw cap top. Acidify with 0.8 N sulfuric acid using 1 ml of acid per ml of aliquot, and let stand for 10 minutes. Heat sample to 50-60°C on a hot plate. Add oxalic acid solution, using 1 ml per ml of aliquot and add 0.5 ml excess. Let stand, shaking occasionally, until solution becomes colorless. This may take up to five minutes. Cool to room temperature and dilute to 30.0 ml mark with distilled water. A reagent blank containing 2.0 ml of absorption solution should be run with each batch of samples. Add to the samples and reagent blank one Nitra Ver pillow reagent and shake for 2 minutes on a mechanical shaker or by hand. Let stand for at least 5 minutes, but no longer than 30 minutes, and read in spectrophotometer at 525 mu with 10 mm cells, setting the reagent blank at 100% T.

141120 PREPARATION OF STANDARD CURVE. Weigh and dissolve 0.220 gms of potassium nitrate in 1 liter of distilled water. Dilute 1-5 to make a working standard of 20 ugm NO_2/ml.

Prepare a series of standards containing 1, 2, 3, 4 and 5.0 ml of the standard solution added to 2.0 ml of the absorbing solution. Proceed as described under sample analysis to prepare standard curve.

141121 CALCULATION.

$$\text{ppm } NO_x \text{ as } NO_2 = \frac{\text{Total ugm } NO_2 \text{ found}}{1.88 \times \text{sample volume (in liters)}}$$

DIVISION 16

(50.2) SULFUR CONTENT OF FUELS

A person shall not burn any liquid or solid fuel having a sulfur content in excess of 0.5% by weight.

The provisions of this rule shall not apply to:

(a) The burning of sulfur, hydrogen sulfide, acid sludge or other compounds used in the manufacture of sulfur or sulfur compounds.

(b) The use of liquid or solid fuels to propel any motor vehicle, aircraft, missile, boat or ship.

(c) The use of liquid or solid fuels which do not cause the emission of more than 300 parts per million (by volume) of sulfur dioxide from any source operation.

Compliance with this regulation shall not exempt any person from the requirements of Section 3121 of Regulation 2, or any other applicable Sections of Regulations 2 or 3.

DIVISION 17

(51.21) REDUCTION OF ANIMAL MATTER

A person shall not operate or use any article, machine, equipment or other contrivance for the reduction of animal matter unless all gases, vapors and gas-entrained effluents from such an article, machine, equipment or other contrivance are:

(a) Incinerated at a temperature of not less than 1200 degrees Fahrenheit for a period of not less than 0.3 seconds, or

(b) Processed in a manner which is equally or more effective than (a) above for the purpose of air pollution odor control, as determined by the Air Pollution Control Officer or by experimental operations under provisions of Section 1214 of this Regulation.

A person incinerating or processing gases, vapors or gas-entrained effluents pursuant to this rule shall provide, properly install and maintain in calibration, in good working order and in operation, devices as specified by the Air Pollution Control Officer for indicating temperature, pressure or other operating conditions.

For the purpose of this rule, "reduction" is defined as any heated process including rendering, cooking, drying, dehydrating, digesting, evaporating and protein concentrating.

The provisions of this rule shall not apply to any article, machine, equipment or other contrivance used exclusively for the processing of food for human consumption.

DIVISION 18

(51.8) ASPHALT AIR BLOWING

A person shall not operate or use any article, machine, equipment or other contrivance for the air blowing of asphalt unless all gases, vapors and gas-entrained effluents from such an article, machine, equipment or other contrivance are:

(a) Incinerated at temperatures of not less than 1400 degrees Fahrenheit for a period of not less than 0.3 seconds, or

(b) Processed in a manner which is equally or more effective than (a) above for the purpose of air pollution odor control, as determined by the Air Pollution Control Officer or by experimental operations under provisions of Section 1214 of this regulation.

A person incinerating or processing gases, vapors or gas-entrained effluents pursuant to this rule shall provide, properly install and maintain in calibration, in good working order and in operation devices as specified by the Air Pollution Control Officer for indicating temperature, pressure or other operating conditions.

A REGULATION OF THE BAY AREA AIR POLLUTION CONTROL DISTRICT REGULATING REACTIVE ORGANIC GAS EMISSIONS.[1]

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[1] Bold-face type is used throughout this Regulation to indicate words defined in either Division 1 or 2. Except as otherwise specifically defined in this Regulation and except where the context otherwise indicates, words used in this Regulation are used in exactly the same sense as the same words are used in Chapter 2.5, Division 20, of the Health and Safety Code of the State of California.

REGULATION 3

(2.0) DIVISION 1 - SCOPE

(2.0) CHAPTER 1 - APPLICATION OF THIS REGULATION

1101 This Regulation shall apply, except as excluded in Chapter 2, Division 1, to emission of reactive organic gases from the source operations defined in Division 3, and to the registration of each person responsible for organic gas emissions, for which limits are established by this Regulation.

1102 Person means any natural person, a corporation, government agency, public officer, association, joint venture, partnership or any combination of such, jointly or separately, operating in concert for any common objective related to the purposes of this Regulation. It includes the owner, lessor, lessee, tenant, licensee, manager, and operator, or any of such, of any emission point or any source operation related thereto, or of any interest in such emission point or source operation.

(2.0) CHAPTER 2 - EXCLUSIONS FROM APPLICATION OF THIS REGULATION

1200 This Regulation does not apply to emissions arising from the source operations listed in Section 1201 through 1217.*

1201 Aircraft, and vehicles as defined by the Vehicle Code of the State of California, and the filling of fuel tanks attached to such equipment.

1202 Internal combustion engines of less than 1500 cubic inches displacement; or any engine used solely as a standby source of motive power.

1203 Source operations utilized exclusively in connection with any structure designed and used exclusively as a dwelling for not more than two families, provided that this exclusion does not apply to the application of a building finish.

1204 Source operations or emission points or emissions where all of the requirements of Sections 1204.1, 1204.2, and 1204.3 are met.

1204.1 The air contaminants shall be purposely emitted for the sole purpose of a specific beneficial use of a major portion of such air contaminants; and

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*The Control Officer may require registration of sources listed under Section 1212 through 1217.

1204.2 Essentially all of the air contaminants shall be confined to the area in which such beneficial use is obtained; and

1204.3 The quantity and nature of the air contaminants, and the proportion of air contaminants used in relation to amounts of other materials involved in the beneficial use of air contaminants, shall conform to accepted practice in the type of use employed.

1205 Experimental operations where all of the requirements of Sections 1205.1, 1205.2 and 1205.3 are met.

1205.1 The purpose of the operation and the need for the exception arises from investigation, experiment or research to advance the state of knowledge or to improve technique; and

1205.2 The Control Officer has given express prior approval which shall include limitation of time; and

1205.3 The Health Officer having jurisdiction has been consulted and has concurred in all terms of the exclusion.

1206 Open outdoor fires which meet the requirements of Section 3, Regulation 1; and fires used only for recreational purposes, residential heating, or occasional cooking of food for human beings, where such use is accomplished in a fireplace or barbecue pit.

1207 Laboratory equipment used exclusively for chemical or physical analyses or experimentation.

1208 Any emission point which is not an intended opening, and from which no significant quantities of air contaminants are emitted.

1209 Smoke generators which are intentionally operated for purposes of training observers in observing the shade or opacity of emissions under Division 3 of Regulation 2.

1210 Incineration and salvage operations as defined and regulated in Regulation 2.

1211 Any internal combustion engine using natural gas as fuel.

1212 Any source operation except application of building finishes which emits less than 10 pounds per day of reactive organic gases or less than 20 pounds per day of organic gases.

1213 Reactive organic gas emissions to the workroom atmosphere which are limited so that concentrations in the breathing zone are less than the maximum allowable concentration (MAC) published in the General Industry Safety Orders of the Division of Industrial Safety of the State of California Department of Industrial Relations.

1214 Any source operation in which the reactive organic compounds are less than 5% by volume of the organic compounds in the organic gas emissions.

1215 Any source operation or group of source operations which are related to each other by being a part of a continuous process, or a series of operations on the same process material, for which emissions of reactive organic gases are reduced at least 85% overall.

1216 Emissions from storage in or loading into any tank having a capacity of less than 2,000 gallons which was installed prior to the date of adoption of this Regulation or any underground tank installed prior to date of adoption of this section where the fill line between the fill connection and tank is offset.

1217 Loading of an organic liquid into any stationary storage or vehicular fuel tank having a capacity of 285 gallons or less.

(1.0) DIVISION 2 - DEFINITIONS

2000 The following definitions are adopted for the purposes of this Regulation.

2001 85% overall means the degree of control which results in 85% reduction in the quantity of the reactive organic compounds which would otherwise be emitted. 85% overall reduction of reactive organic compound emissions may be achieved even though control of some individual source operations may be less than 85% efficient, determined as described in Chapter 13, Division 6.

2002 Air pollution abatement operation means any operation which has as its essential purpose a significant reduction in (a) the emission of air contaminants, or (b) the effect of such emission.

2003 Aldehydes mean organic compounds which contain a terminal carbonyl group.

2004 Atmosphere means the air that surrounds the earth, and includes the general volume of gases contained within any building or structure but excludes both:

(a) The gases contained in any building or structure specifically designed for and used as part of an air pollution abatement operation or in a piece of processing or operating equipment, or in any building from which no significant portion of the air contaminants contained therein escapes; and

(b) The gases traveling from a source operation to a collection system, provided such collection system collects the air contaminants discharged by such source operation to such a degree that no significant portion thereof escapes collection, and provided further that such collection system emits all collected gases through a Type "A" emission point.

2005 Barrel means 42 U.S. gallons.

2006 Building finish means any paint, lacquer, varnish or other surface coating material to be used for residential or commercial buildings and their appurtenances, or for industrial buildings.

2007 Quantity per calendar day means the quantity per calendar year divided by 365.

2008 Combustion means the rapid exothermic reaction of any material with oxygen.

2009 Complying industrial surface coating means any paint, lacquer, varnish, ink adhesive or other surface coating material, which emits to the atmosphere organic compounds which on condensation contain 20% by volume or less of reactive organic compounds. Water shall be included in the calculation as described in 61206. Acceptable test methods are described in Division 6.

2010 Complying solvent means any organic solvent which emits to the atmosphere organic compounds which on condensation contain 8% by volume or less of reactive organic compounds, provided that an additional 12% by volume of the organic compounds from the emission may be mono-substituted aromatic organic compounds. Water shall be included in the calculation as described in 61206. Acceptable test methods are described in Division 6.

2011 Complying surface coating means any paint, lacquer, varnish, ink, adhesive or other surface coating material, which emits to the atmosphere organic compounds which on condensation contain 8% by volume or less of reactive organic compounds provided that an additional 12% by volume of the organic compounds from the emission may be mono-substituted aromatic organic compounds. Water shall be included in the calculation as described in 61206. Acceptable test methods are described in Division 6.

2012 Containing device means any stack, duct, flue, oven kettle or other structure or device which so contains an air contaminant, or which so contains an effluent which contains or may contain an air contaminant, as essentially to prevent its entering the atmosphere except through such openings as may be incorporated for that purpose in the containing device; and excludes equipment used for air pollution abatement operations, and any other device which significantly changes the nature, extent, quantity, or degree of air contaminants in the effluent or in which such change does or has a natural tendency to occur.

2013 Effluent means the total volume of gases or liquids emitted from an emission point.

2014 Emission means the act of passing into the atmosphere an air contaminant or an effluent which contains or may contain an air contaminant; or the material so passed to the atmosphere.

2015 Emission point means the location (place in the horizontal plane and vertical elevation) at which an emission enters the atmosphere.

2016 Halogenated organic compounds mean compounds which contain carbon hydrogen and halogen, or carbon, hydrogen and halogen in combination with any other element.

2017 Head space means the gas space above an organic liquid.

2018 Head space reactivity of an organic liquid means that concentration in percent by volume of reactive organic compounds which would exist in a gas in equilibrium with the organic liquid at 14.7 psia and at that liquid temperature which exists in the source operation. Acceptable test methods are described in Division 6.

2019 Hydrocarbon means compounds which contain carbon and hydrogen.

2020 Industrial user means a person in charge of a source operation who applies surface coatings to a product as part of the manufacture, processing or reprocessing of such product, or utilizes volatile organic compounds in manufacture, formulation, processing or other business or commercial activities; but does not include any person applying a building finish to a building or structure.

2021 Oil-water separator means any device or operation which has as its principal purpose separation of liquid organic compounds from an oil-water waste.

2022 Olefin means any organic compound containing one or more carbon-carbon double bonds in the molecule, but does not include benzene, benzene derivatives, or organic compounds in which all olefinic groups contain 3 or more halogen atoms.

2023 Operation means any physical action resulting in a change in the location, form or physical properties of a material, or any chemical action resulting in a change in the chemical composition or chemical or physical properties of a material. The following are given as examples, without limitation of the generality of the foregoing: heat transfer, calcination, double decomposition, fermentation, pyrolysis, electrolysis, combustion, material handling, evaporation, mixing, absorption, filtration, screening and fluidization.

2024 Organic compound means any compound containing carbon and hydrogen, or carbon and hydrogen in combination with any other element.

2025 Organic gases are organic compounds which are emitted to the atmosphere as gases or which exist as gases after being emitted to the atmosphere.

2026 Organic liquids means all organic compounds which would exist as liquids at standard conditions, when their liquid and vapor phases are in equilibrium.

2027 Organic solvents means organic liquids which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents, or for other similar uses, but does not include those used as fuels, antiseptics or anesthetics.

2028 Oxygenated organic compounds means compounds containing carbon, hydrogen and oxygen, or carbon, hydrogen and oxygen in combination with any other element.

2029 Person is defined in Section 1102, Chapter 1, Division 1, of this Regulation.

2030 ppm means parts per million by volume (v/v), expressed as standard dry cubic foot of gas.

2031 psia means pounds per square inch absolute.

2032 Reactive organic compounds means all olefins, substituted aromatics, and aldehydes. Acceptable test methods are described in Division 6.

2033 Reid vapor pressure means the pressure determined according to the American Society for Testing and Materials method, ASTM - Designation: D323-58.

2034 Significant dimension of an area means the square root of the numerical value of the area.

2035 Source operation means the last operation preceding the emission of an air contaminant, which operation (a) results in the separation of the air contaminant from the process materials or in the conversion of the process material into air contaminants, as in the case of combustion of fuel; and (b) is not an air pollution abatement operation.

2036 Standard conditions means a pressure of 14.7 psia and a temperature of 60° F.

2037 Standard cubic foot of gas means that amount of gas which would occupy a cube having dimensions of one foot on each side, if the gas were at standard conditions; calculation to determine the number of standard cubic feet corresponding to actual measured conditions shall follow accepted engineering practice.

2038 Standard dry cubic foot of gas means that amount of the gas which would occupy a cube having dimensions of one foot on each side, if the gas were free of water vapor and at standard conditions; calculation to determine the number of standard dry cubic feet corresponding to actual measured conditions shall follow accepted engineering practice.

2039 A submerged fill pipe means any fill pipe or discharge nozzle which meets any one of the following conditions:

(a) The bottom of the discharge pipe or nozzle is below the surface of liquid in the receiving vessel for at least 95% of the volume filled.

(b) The bottom of the discharge pipe or nozzle is less than 6 inches from the bottom of the receiving vessel.

(c) The bottom of the discharge pipe or nozzle is less than 2 pipe or nozzle diameters from the bottom of the receiving vessel.

(d) Other conditions acceptable to the Air Pollution Control Officer.

2040 Substituted aromatics means organic compounds which contain the benzene ring configuration and one or more substituents on the benzene ring. Compounds containing only halogen atoms on the benzene ring and benzene are not included in the definition.

2041 Total "carbon". Organic compounds calculated as total "carbon" shall be determined as follows:

(a) Total "carbon" of an individual organic compound is equal to the ppm of that compound in the effluent multiplied by the number of carbon atoms present in the molecule.

(b) Total "carbon" in an effluent is the sum of the total "carbon" of all of the individual organic compounds present in the effluent. Methane shall not be included in the calculation of total "carbon".

2042 Type "A" emission point means an opening of reasonable regular geometry, preceded by a containing device which as a minimum length six times the significant dimension of the emission point and within such minimum length; has a reasonable straight gas flow channel; has smooth interior surfaces; has area and geometry essentially constant and equal to the emission point; and does not cause a significant change in the gross direction of gas flow.

2043 Type "B" emission point means any emission point not qualifying under Section 2042 as a Type "A" emission point.

2044 Vapor pressure means the pressure exerted by the vapors released from an organic compound at any given temperature. Vapor pressure by reference to Figures 1, sure may be determined from Reid vapor pressure by reference to Figures 1, 2, 3, 4, and 5 of API Bulletin 2518, "Evaporation Loss from Fixed Roof Tanks."

(2.0)

DIVISION 3
GENERAL LIMITATIONS AND REQUIREMENTS

3000 This division applies to all source operations unless such source operation is excluded under Chapter 2, Division 1, of this Regulation.

(2.0) CHAPTER 1 - GENERAL LIMITATIONS

3101 Except as otherwise provided in Chapter 2, Division 1, and Chapters 1 and 3, Division 3, no person shall cause, let, permit suffer, or allow an emission of an effluent containing a concentration of more than 50 ppm of organic compounds calculated as hexane (or 300 ppm total "carbon").

3102 Compliance with any of sections 3102.1 through 3102.6 shall be deemed to be in compliance with Section 3101. Showing of such compliance by the person responsible for an organic gas emission shall include applicable portions and/or calculation procedures contained in API Bulletin 2514, "Evaporation Loss from Tank Cars, Tank Trucks and Marine Vessels" in API Bulletin 2517, "Evaporation Loss from Floating Roof Tanks," and API Bulletin 2518, "Evaporation Loss from Fixed Roof Tanks."

3102.1 Organic gas emissions from a stationary storage tank of equal to or less than 1,000 barrels capacity and containing organic liquids with a vapor pressure greater than 1.5 psia under actual storage conditions, and a head space reactivity greater than 5% shall not exceed that rate at which organic gases whould be emitted if the tank were filled through a submerged fill pipe.

3102.2 Organic gas emissions calculated as a liquid from a facility loading more than 25,000 gallons per calendar day of organic liquids with a Reid vapor pressure greater than 4 and a head space reactivity greater than 5% into transportable containers larger than 100 gallons capacity shall not exceed 0.01% of the volume loaded.

3102.3 Organic gas emissions from a facility loading between 500 and 25,000 gallons per calendar day of organic liquids with a Reid vapor pressure greater than 4 and a head space reactivity greater than 5% into transportable containers larger than 10 gallons capacity shall not exceed that amount which would be emitted if the containers were filled through a submerged fill pipe.

3102.4 Organic gas emissions from a stationary storage tank which has a storage capacity greater than 1,000 barrels, and which contains organic liquid having a vapor pressure under actual storage conditions greater than 1.5 psia but equal to or less than 11 psia and a head space reactivity greater than 5%, shall not exceed that amount of organic gas emission which the same tank, containing the same organic liquid, would emit if equipped with a floating roof in good condition. Such organic gas emissions shall be calculated according to API Bulletin 2517, "Evaporation Loss from

Floating Roof Tanks," or shall be calculated by applicable procedures acceptable to the Control Officer where API Bulletin 2517 procedures are not valid.

3102.5 Organic gas emissions from a stationary storage tank which has storage capacity greater than 1,000 barrels and which contains organic liquid having a vapor pressure under actual storage conditions greater than 11.0 psia and a head space reactivity greater than 5%, shall not exceed that amount of organic gas emission which the same tank, containing the same organic liquid would emit if it were storing an organic liquid of 11 psia vapor pressure and were equipped with a floating roof in good condition. Such organic gas emission shall be calculated according to API Bulletin 2517. "Evaporation Loss from Floating Roof Tanks," or shall be calculated by applicable procedures acceptable to the Control Officer in cases where API Bulletin 2517 procedures are not valid.

3102.6 Organic gas emissions, calculated as a liquid, from an oil-water separator processing more than 200 gallons per calendar day of organic liquid having a temperature of 401°F or less at the 10% point recovered when distilled by ASTM Method D86-56, and having a head space reactivity greater than 5%, shall not exceed 0.2% of the volume of organic liquid recovered by the oil-water separator.

3103 Except as provided in Section 3103.1 or 3103.2, no person shall sell, or offer for sale, for delivery to a buyer for use within the Bay Area Air Pollution Control District, in containers of one quart capacity or larger, any surface coating or organic solvent that does not meet the requirements of a complying surface coating or a complying solvent.

3103.1 Surface coatings or solvents which are held for sale or shipment to an industrial user are exempt from the provisions of Section 3103 provided the seller submits to the Bay Area Air Pollution Control District the names and addresses of customers who make unit purchases of surface coatings or solvents other than complying surface coatings or complying solvents in 55 gallon drums, in larger containers, or in bulk, within the Bay Area Air Pollution Control District. Information disclosed to the Bay Area Air Pollution Control District by sellers pursuant to this section shall be treated as "official information" pursuant to Evidence Code, Section 1040.

3103.2 Organic solvents which are held for sale or shipment to a user and which are formulated for dilution by the user prior to use or application so that the final product as diluted will be a complying solvent, are exempt from the provisions of Section 3103, provided that labeling is to that effect.

3103.3 No person shall, without meeting the limitations and requirements of this Regulation, employ, use, apply, evaporate, or dry any surface coating or organic solvent purchased in containers of one quart capacity or larger, unless the surface coating or solvent is in compliance with the standards for a complying surface coating or a compying solvent.

3103.4 No person shall, without meeting the limitations and requirements of this Regulation, thin or dilute any paint, lacquer, varnish, ink, adhesive, or other surface coating material or any organic solvent with any material so that after dilution it will not be a complying surface coating or a complying solvent; provided that this section shall not apply to an industrial user using complying industrial surface coating, nor to the manufacture of paint, lacquer, varnish, ink, adhesive, or other surface coating material or to the manufacture of solvent.

3103.5 A person who uses in an operation only complying surface coating, or complying solvent, or an industrial user who uses in an operation only complying industrial surface coating is not required to meet the requirements of Sections 3101 and 3103.3 for that operation. This Section shall not apply to the use of surface coating where heat is applied if emissions from such use contain more than 5 ppm of aldehydes expressed as formaldehyde.

3103.6 A label or mark placed on the container by the manufacturer that a surface coating or an organic solvent is a complying surface coating, a complying industrial surface coating, or a complying solvent within the meaning of this Regulation shall be prima facie evidence of the fact stated in the label or mark.

(2.0) CHAPTER 2 - GENERAL REQUIREMENTS

3201 SAMPLING FACILITIES - The person responsible for emission of air contaminants, from any emission point, for which emission limits are established in this Regulation shall, upon request of the Control Officer, provide in connection with such emission point and related source operations such sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the nature, extent, and quantity and degree of air contaminants which are or may be emitted as a result of such operation. Such facilities may be either permanent or temporary, at the discretion of the person responsible for their provision; shall be suitable for determinations consistent with the emission limits established in this Regulation; and shall comply with all applicable laws and regulations concerning safe construction or safe practice in connection with such facilities.

3202 REGISTRATION - Except as excluded by Section 1200 through 1211, Chapter 2, Division 1, and excepted by Chapter 3, Division 3 of this Regulation each person responsible for emission of organic gases shall register with the Control Officer: (1) his business name, (2) address, (3) name of the responsible managing officer, (4) a description of the business entity, and (5) the nature of the business. He shall maintain such registration in current status by notifying the Control Officer of a significant change in any item of information furnished in compliance with this Section. He shall thereafter provide, on registration forms, provided by the Control Officer, any relevant information regarding such emission as may be required. Every person regulated by this Regulation may be served with notices, including notices of hearing before the Hearing Board, by certified mail, addressed to the address contained in the registration card on file with the Control Officer.

3203 UPSET CONDITIONS, BREAKDOWN OR SCHEDULED MAINTENANCE - Emissions exceeding any of the limits established in this Regulation as a direct result of upset conditions in or breakdown of any air pollution abatement equipment or related operating equipment, or as a direct result of the shutdown of such equipment for scheduled maintenance, shall not be deemed to be in violation of the rules establishing such limits, provided all the requirements of this Section 3203, to wit, Sections 3203.1 through 3203.3 are met.

3203.1 Such occurrence shall have been reported to the offices of the District as soon as reasonably possible; for scheduled maintenance, such report shall be submitted at least 24 hours prior to shutdown; and for upset conditions or breakdown, such report shall in any case be made within four hours of the occurrence.

3203.2 Section 3203 shall not apply to scheduled maintenance of air pollution abatement equipment except in those cases where the maximum reasonable effort, including off-shift labor where required, has been made to accomplish such maintenance during periods of non-operation of any related source operations.

3203.3 The person responsible for such emission shall, with all practicable speed, intiate and complete appropriate reasonable action to correct the conditions causing such emissions to exceed said limits; to reduce the frequency of occurrence of such conditions; to minimize the amount by which said limits are exceeded; and to reduce the length of time for which said limits are exceeded; and shall, upon request of the Control Officer, submit to the Control Officer a full report of such occurrence, including a statement of all known causes and of the scheduling and nature of the actions to be taken pursuant to this Section 3203.3.

3204 SEPARATION OF EMISSIONS - If air contaminants from a single source operation are emitted through two or more emission points, the total emitted quantity of any air contaminant, limited in this Regulation, shall not exceed the quantity which would be the allowable emission through a single emission point; and the total emitted quantity of any such air contaminant shall be taken as the product of the highest concentration measured in any of the emission points and the effluent through all emission points, unless the person responsible for the source operation establishes a more accurate determination of the total quantity of emissions.

3205 COMBINATION OF EMISSIONS

3205.1 If air contaminants from two or more source operations are combined prior to emission and there are adequate and reliable means reasonably susceptible to confirmation and use by the Control Officer for establishing a separation of the components of the combined emission to indicate the nature,extent, quantity and degree of emission arising from each such source operation, this Regulation shall apply to each such source operation separately.

3205.2 If air contaminants from two or more source operations are combined prior to emission and the combined emissions cannot be separated according to the requirements of 3205.1,this Regulation shall be applied to the combined emission as if it originated in a single source operation subject to the most stringent limitations and requirements placed by this Regulation on any source operations whose air contaminants are so combined.

(9.0) (7.0) CHAPTER 3 - EXCEPTED SOURCE OPERATIONS TO CONFORM TO MODERN MAINTENANCE AND OPERATING PRACTICES

3300 Emissions from the following listed source operations and equipment shall be subject to this Section 3300 and to all of Division 4 and to no other part of this Regulation, provided that emissions are minimized by modern maintenance and operating practices used by superior operators of like equipment and which may reasonably be applied under the circumstances. This Section 3300 shall not require such source operations and equipment to meet emission limitations more restrictive than the limits which would apply if they were not excepted by this Chapter 3.

3301 The following equipment:

3301.1 Presses used for the curing of rubber products and plastic products.

3301.2 Ovens used exclusively for the curing of plastics which are concurrently being vacuum held to a mold or for the softening or annealing of plastics.

3301.3 Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.

3301.4 Equipment used exclusively for the melting or applying of wax.

3301.5 Equipment used exclusively for the packaging of lubricants and greases.

3301.6 Equipment used exclusively for the manufacture of water emulsions of waxes, greases or oils.

3301.7 Vacuum producing devices in laboratory operations or which are used exclusively in connection with other equipment which is excluded or excepted by this Regulation.

3301.8 Vacuum producing devices which do not remove or convey air contaminants from another source.

3301.9 Equipment used exclusively to compress or hold natural gas.

3301.10 Equipment and processing plant equipment used for the purpose of preparing food for human consumption where no organic solvents are used.

3301.11 Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enamel drying ovens.

3301.12 All printing presses other than rotogravure printing presses.

3301.13 Equipment used exclusively for bonding lining to brake shoes.

3301.14 Equipment used for hydraulic and hydrostatic testing.

3301.15 Cold reduction equipment used in metal forming.

3301.16 Ovens and furnaces used for heat treating and annealing metals.

3301.17 Oil quench tanks used for tempering heated metals.

3301.18 Crucible type or pot type furnaces with a brimful capacity of less than 450 cubic inches of molten metal.

3301.19 Space heating and heat transfer operations using gas fuel and rated at less than one million Btu's per hour.

3301.20 Equipment used exclusively for steam cleaning.

3301.21 Internal combustion engines equal to or greater than 1500 cubic inches displacement.

3302 The following equipment or any exhaust system or collector serving exclusively such equipment:

3302.1 Ovens used exclusively for curing potting materials or for castings made with epoxy resins.

3302.2 Equipment used for compression molding or injection molding of plastics.

3302.3 Dipping operations for coating objects with oils, waxes, or greases.

3302.4 Dipping operations for applying coatings of natural or synthetic resins which contain no organic solvents.

3302.5 Unheated solvent dispensing containers, unheated solvent rinsing containers, or unheated coating dip tanks, all of 100 gallons capacity or less.

3302.6 Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity or any combination thereof.

3302.7 Shell core and shell molding machines.

3302.8 Die casting machines.

3302.9 Laboratory equipment used exclusively for chemical or physical analyses and bench scale laboratory equipment.

3303 Containers, reservoirs, or tanks used exclusively for the storage of organic liquid normally used as solvents, diluents, or thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins or other surface coatings and having a capacity of 6,000 gallons or less.

3304 Valves.

3305 Flanges.

3306 Relief valves.

3307 Pump and compressor seals.

3308 Blind changing.

3309 Cooling towers.

3310 Crude oil production operations.

3311 Tank trucks, tank cars, and marine vessels except when being loaded with organic liquid.

3312 Loading of organic liquid with Reid vapor pressure less than 4.0 into transportable containers.

3313 Loading of organic liquid with a head space reactivity of 5% or less into transportable containers.

3314 Loading of 500 gallons per calendar day or less of organic liquid into transportable containers.

3315 Loading of organic liquid into transportable containers of 10 gallons capacity or less.

3316 Storage tanks containing organic liquid with a vapor pressure equal to or less than 1.5 psia under actual storage conditions.

3317 Storage tanks containing organic liquid with a head space reactivity of 5% or less.

3318 Oil-water separators recovering 200 gallons or less per calendar day of organic liquid.

3319 Oil-water separators recovering organic liquid with head space reactivity of 5% or less.

3320 Loading of railroad tank cars.

3321 Loading of marine vessels.

3322 The spraying or other employment of agricultural chemicals and pesticides.

(2.0)

DIVISION 4
GENERAL PROVISIONS

(6.0)

CHAPTER 1 - TIME FOR COMPLIANCE

4101 This regulation shall be in full force on January 4, 1968.

4102 A reasonable time for compliance with this regulation shall be allowed by the Control Officer provided that persons responsible for any emission not in compliance with this regulation submit reports to the Control Officer at his request which are acceptable to him, and which give the expected time for compliance, the intended method of compliance, and the progress towards compliance.

4103 Persons responsible for emissions which will not be in compliance with this regulation on January 4, 1968, and for which emissions a reasonable time for compliance beyond such date is required, shall comply with Section 4102 by October 4, 1967.

4104 Time for compliance shall include each of the following: Time for engineering, time for procurement, time for fabrication, and time for installation and adjustment. The Control Officer may require such periodic reports on each phase of progress toward compliance. Failure at any phase to make reasonable progress toward completion of such installations as are required for final compliance shall be deemed an unreasonable delay in compliance.

(2.0)

CHAPTER 2 - GENERAL

4201 Nothing in this regulation authorizes or is intended to authorize any practice or combination of practices intended or designed to evade or circumvent the basic requirements of this regulation.

4202 Nothing in this regulation is intended to permit any practice which is a violation of any statute, ordinance, rule or regulation.

4203 This regulation is not intended to apply to the quality requirements for the work room atmosphere necessary to protect an employee's health from contaminants emitted by his employer; nor is it concerned with the occupational health factors in an employer-employee relationship, provided that this shall not exempt any person from meeting the requirements of the Division of Industrial Safety of the Department of Industrial Relations of the State of California, published in the General Industry Safety Orders relative to the maximum allowable concentration and labeling requirements for such toxic solvents as benzene and carbon tetrachloride. Measurements of emissions taken within a building shall not be used to prove a violation of this regulation except insofar as they are relevant to prove the kind, nature, extent, quantity, or degree of air contaminants which are or may be emitted to the atmosphere outside of the building or to determine compliance with Section 3300.

4204 Wherever in this regulation a section makes a requirement for emissions, and other provisions of this regulation are less restrictive as to emissions under certain conditions or operations, proof establishing a prima facie case of violation of the most restrictive requirement establishes a rebuttable presumption of a violation of this regulation. The burden of producing evidence that a less restrictive requirement or an exception applies shall be upon the person seeking to come within such less restrictive provision or exception.

4205 When the person who is the owner of a source operation is not the same as the person who is the owner of the emission point discharging air contaminant which originate in such source operation, the person who is the owner of the emission point shall be responsible for complying with this regulation. For the purposes of this Section 4205, "owner" shall include owner, lessee, tenant, licensee, manager or operator, or any of such.

4206 SEVERABILITY - If any provision, clause, sentence, paragraph, section or part of this regulation or application thereof to any person or circumstance shall for any reason be adjudged by a court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of this regulation and the application of such provision to other persons or circumstances, but shall be confined in its operation to the provision, clause, sentence, paragraph, section or part thereof directly involved in the controversy in which such judgment shall have been rendered and to the person or circumstance involved, and it is hereby declared to be the intent of the Board of Directors that this regulation would have been adopted in any case had such invalid provision or provisions not been included.

(9.0)

DIVISION 5
CALCULATION METHODS AND GENERAL SAMPLING PROCEDURES

5000 Calculation methods and sampling procedures prescribed in this division are intended to facilitate the determination of concentrations or quantities, or both, of the various kinds of air contaminants defined in Division 2 of this Regulation. Any method or procedure which provides for such determination with accuracy equal to or greater than the prescribed method or procedure shall be acceptable; provided, that the burden of demonstrating such accuracy shall rest upon the person proposing the method or procedure.

(9.0)

CHAPTER 1 - CALCULATIONS

5101 Calculations of quantities of emissions of air contaminants which are reported in ppm concentrations shall be accomplished by the calculation methods prescribed in this Chapter 1, or by methods which yield equivalent or more accurate results. All calculation methods not specifically prescribed in this Regulation shall conform to accepted engineering practice.

5102 Calculation of area of an opening or containing device shall be accomplished by determining the area of a projection of the opening or of the gas passage upon a plane to which the principal direction of gas flow is perpendicular.

5103 Calculation of quantity of emission from a Type B emission point shall be the quanity of emission computed by multiplying the quantity of emission from a test area by the proportion which the whole area bears to such test area. Such test area may be taken as the cross sectional area of the inlet to a sample probe. The emission from any test area of a Type "B" emission point shall be deemed to be representative in every respect of the emissions from the whole area of such Type "B" emission point. Emissions from the test area may be measured at the place and by the procedure which result in the highest measurement of air contaminants. This Section shall not apply if other sampling and testing facilities which will disclose the nature, extent, quantity, and degree of air contaminants are provided by the person responsible for the emission.

(9.0)

CHAPTER 2 - STANDARD GAS SAMPLING PROCEDURES FOR ORGANIC COMPOUNDS IN VENTS AND STACKS

5201 The following stack sampling procedures shall be adhered to in the determination of organic gas emissions. The controlling factor in all source test procedures shall be that every reasonable effort will be made to obtain and deliver for anlysis samples which are truly representative of the organic gas emissions being determined. Other procedures may be used if such other procedures result in equivalent or more accurate determinations of the organic gas emissions being sampled.

5202 Proper adjustment shall be made in the sampling procedure to compensate for significant nonhomogeneity in the gas stream, so that the sample of the gas stream approaches a representative sample.

5203 All sampling lines shall be free of significant leakage, and between the sample gas inlet and the sample collection device, they shall be as short as is compatible with the sampling situation and composed of materials not significantly affecting or affected by the constituents of the sample stream. The sampling lines shall be purged thoroughly with the gas to be sampled prior to the taking of the sample.

5204 Where liquid filled impingers are used for sampling, two or more such impingers shall be connected in series followed by a dropout container having a stem thermometer inside. These devices shall be partially immersed in an ice-water bath unless noted otherwise. The impingers shall be equivalent to the Greenburg-Smith impinger in use and result. Sampling shall be at 0.5 cfm and for at least 15 minutes.

5205 Where adsorption devices are used for sample collection, at least three shall be used, and the devices shall be connected in series, and each device shall contain approximately 20 gms. of 10-20 mesh silica gel which has been dried at approximately 230°F for two hours. The adsorption devices shall be approximately 1" inside diameter x 5" length glass tubing. Both ends of the silica gel packing shall be plugged with glass wool fibers to prevent adsorbent losses. The samplers shall be cooled so as to be maintained at ambient air temperature or lower. Sampling shall be at 0.5 cfm or less, depending on the concentration of organic materials, and for at least 30 minutes.* The adsorption devices shall be preceded by a condensing device to remove excess water and to cool the sampled effluent to 65° F or lower. The condensed water shall be analyzed for organic compound content and the quantity added to the amount found in the adsorption devices.

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* Or until the third adsorption device becomes warm, whichever might be the shortest time.

5206 Where an evacuated vessel is used for sample collection, the vessel shall be of stainless steel and 8 to 34 liter capacity. The sampler shall have a suitable vacuum-gage indicator. Sampling shall be continuous for at least 15 minutes. The sampling rate over the time interval shall be adjusted to be proportional to the effluent flow rate so as to obtain a representative sample.

5207 Evacuated tanks used for sampling shall be handled in such a manner that significant leaks can be detected, and in the event of such a leak, the tank shall not be used.

5208 All equipment used for sampling shall be adequately cleaned prior to use.

5209 Adequate precautions will be taken to avoid loss and contamination of the sample.

5210 All sampling lines shall be checked for the presence of condensates. If condensation has occurred, adjustments in procedure shall be made either to prevent its occurrence or to compensate for the condensed material in the sample.

5211 Where impingers or other continuous flow sampling devices are used, a gas measuring device placed in series with and downstream of the samplers shall be used to determine the volume of gas sampled. Pressure and temperature indicators shall be installed at appropriate points to indicate sample gas conditions.

5212 Sufficient test data and notes shall be recorded at the time of the test by the personnel conducting the sampling to permit the determination of emission of air contaminants and to permit evaluation of results at a later date. Data from all portions of the sampling devices shall be included in the report.

5213 Where samples are held more than 24 hours before analysis, evidence must be presented to show that any deterioration of the collected samples prior to analysis would not be significant.

5214 Any procedure or condition prescribed by any other part of this Regulation shall be adhered to in any applicable sampling test. At least two tests for a particular organic gas emission shall be made. More shall be made if necessary to produce a representative sample.

5215 Tests for determining compliance with Section 3101 shall be based on continuous sampling for not less than 30 consecutive minutes or 90% of the time of actual source operation, whichever is less.

(9.0) CHAPTER 3 - SAMPLING DEVICES FOR SPECIFIC ORGANIC COMPOUND EMISSIONS

5301 For total carbonyls, use at least two impingers filled with 100 ml. of 1% sodium bisulfite solution in each.

5302 For hydrocarbons, use stainless steel tanks. The sampled effluent shall be dried through a cartridge containing anhydrous calcium sulfate.

5303 For olefins and substituted aromatic compounds, use at least three cartridges, each packed with approximately 20 gms. of silica gel of 10-20 mesh. The cartridges are preceded by a condensing device to remove excess water and to cool the sampled gas stream to 65° F or lower.

5304 For combustible organic gas emissions, containing no product of combustion, use a portable gas vapor detector described in Chapter 6, Division 6, to determine the relative organic gas concentrations. If such detector indicates greater than 50 ppm as hexane, other prescribed tests may be made accordingly. For combustible organic gas emissions containing products of combustion, use a flame ionization detector described in Chapter 2, Division 6.

5305 For organic gas emissions for which no sampling procedure is prescribed, a sampling procedure shall be used which will collect such compounds in the effluent.

(9.0)

DIVISION 6
ANALYTICAL PROCEDURES

6000 Analytical procedures prescribed in this division are intended to facilitate the determination of concentrations or quantities, or both, of the various kinds of air contaminants defined in Division 2 of this Regulation. Any procedure which provides for such determination with accuracy equal to or greater than the prescribed procedure shall be acceptable; provided, that the burden of demonstrating such accuracy shall rest upon the person proposing the procedure.

(2.0) CHAPTER 1 - GENERAL OUTLINE

6100 Organic compounds which come under this Regulation include olefins, substituted aromatics and aldehydes. Since no single procedure will measure the concentration of all such compounds which may be present in an effluent, a variety of general analytical procedures are described in this Regulation. For such classes of organic compounds which cannot be determined by the procedures described, suitable alternate procedures described in the chemical literature shall be used. For each of the procedures described, alternate procedures may be used, provided that such procedures yield equivalent or more accurate results to the procedure described.

6100.1 Total concentration of reactive organic gases in an effluent shall be calculated by adding the concentrations of the various classes of reactive organic gases which have been found in the effluent. Depending on the nature of the reactive organic gases in the effluent, it is necessary to add the concentrations of olefins, substituted aromatics and aldehydes to arrive at the total concentration of reactive organic gases in the effluent.

(9.0) CHAPTER 2 - DETERMINATION OF TOTAL ORGANIC GASES IN SAMPLES TAKEN FROM EFFLUENTS.

6201 SCOPE - This procedure describes a method for determining total organic gas concentration in an effluent or in samples which can be collected by filling evacuated containers from an effluent or from a storage tank.

6202 OUTLINE OF METHOD - Total organic gas concentration is measured by a Flame Ionization Detector. Results are reported as total "carbon," using methane as a standard. Methane is measured separately by gas chromatography and is subtracted from the total organic gas concentration as measured by the Flame Ionization Detector.

6203 DESCRIPTION OF APPARATUS - Flame ionization detectors make use of the principle that when an organic gas is introduced into a hydrogen flame, electron concentrations are formed and can be measured. Inorganic gases such as H_2, N_2, CO_2, CO and H_2O vapor do not interfere significantly. The response of such an instrument is approximately proportional to the number of carbon atoms in the compound being burned; that is, hexane will give approximately six times the response of methane. The instrument can thus be considered as a "carbon" counter.

(9.0)(50.4) CHAPTER 3 - DETERMINATION OF OLEFINS AND SUBSTITUTED AROMATICS IN EFFLUENTS

6301 SCOPE - This procedure describes a method for the determination of olefins and substituted aromatics in an effluent.

6302 OUTLINE OF METHOD - The olefins and substituted aromatics are adsorbed on silica gel. They are removed from the silica gel by an appropriate organic solvent and determined by gas chromatography.

6303 DESCRIPTION OF APPARATUS - Any commercially available gas chromatograph with a detector system capable of responding to olefins and substituted aromatics may be used. Sensititvity of the detector shall be such that a minimum response of 0.01 mv on a 1 mv recorder (10 inch scale) is given by one microgram of toluene after the toluene has passed through the analytical column of the instrument. Choice of anlytical columns, flow rate of carrier gas, temperature and other operating parameters shall be such as to enable the separation and detection of mixtures of olefins and substituted aromatics which have been adsorbed on silica gel, and then eluted.

6304 SAMPLING PROCEDURE - Collection of samples shall follow the procedures specified in Diviison 5.

6305 ANALYTICAL PROCEDURE - The contents of each silica gel cartridge shall be emptied into separate 125 ml flasks. The gel is covered with the minimum volume of solvent required to remove the adsorbed compounds. After shaking on a mechanical shaker for one hour, a suitable aliquot (1-10 microliters) is injected into the chromatograph for analysis.

6306 CALIBRATION OF CHROMATOGRAPH - Known concentrations of olefins and substituted aromatics dissolved in the same solvent as used in the analytical procedure shall be subjected to the procedure described in this Chapter. The peak height shall be recorded for each separated component and a graph relating concentration and peak height for each component constructed.

6307 CALCULATIONS - Total quantity of olefins plus substituted aromatics is the sum of individual olefins and substituted aromatics found. Quantity of individual olefins plus substituted aromatics is calculated from the observed peaks as described in Paragraph 6306. Final calculation of total olefins plus substituted aromatics shall include volume of gas sampled, volume of solvent used to elute compounds from silica gel and volume of solution injected into the gas chromatograph in accordance with standard practice.

9.0) (50.4) CHAPTER 4 - PROCEDURE FOR DETERMINING THE PERCENT OLEFINS AND SUBSTITUTED AROMATICS IN ORGANIC LIQUIDS CONTAINING NO OXYGENATED ORGANIC COMPOUNDS

6401 SCOPE - This procedure describes a method for the determination of olefins and substituted aromatics in organic liquids containing no oxygenated organic compounds.

6402 OUTLINE OF METHOD - Olefins and substituted aromatics are reacted with a sulfonation mixture. The procedure is a modification of ASTM procedure D1019-62 "Olefins Plus Aromatic Hydrocarbons in Petroleum Distillates." Benzene, if present, is measured separately and subtracted from the total

6403 REAGENTS - Sulfonation acid. Prepare as described in ASTM D1019-62.

6404 PROCEDURE - Seal a 6 mm O.D x 4 mm I.D. x 9" length of glass tubing (uniform bore) at one end. Accurately deliver 500 microliters of liquid to be tested into the tube. Immerse the tube in an ice-salt mixture and carefully add 1.0 ml of sulfonation acid. While still immersed in the cold bath, seal the other end of the tube in an oxygen-gas flame. Remove the tube from the ice bath and shake to mix the solvent and sulfonation acid. Invert the tube and shake again; repeat this procedure six times. Centrifuge at 1,000 rpm for 3 minutes. Read the length of residual solvent with an accurate caliper. Repeat the mixing and centrifugation and read again. Repeat until readings are the same.

6405 CALCUALTION

(a) Calculate the length equivalent to 500 μl of unreacted solvent as follows:

$$L = \frac{0.500 \times 4}{\pi D^2}$$ (where D = diameter of tube in centimeters)

(b) Calculate the percent paraffin from the length of residual solvent as follows:

$$\% \text{ paraffin} = \frac{\text{Length of residual solvent}}{\text{Length calculated for } 500\ \mu\text{l}} \times 100$$

(c) Calculate the percent olefins plus aromatics as follows:

% olefins plus aromatics = (100 -- % paraffin)

(9.0)(50.4) CHAPTER 5 - DETERMINATION OF TOTAL CARBONYLS

6501 SCOPE - This procedure describes a method for the determination of total carbonyls in effluents. Ketones, if present, are measured separately, and subtracted from the total carbonyls.

6502 METHOD SUMMARY - The samples are reacted with a solution of sodium bisulfite to form addition compounds. The excess bisulfite-ion is destroyed with iodine solution. By adjusting the pH of the solution, the addition compounds are decomposed, freeing bisulfite-ion equivalent to the carbonyls present in the sample. The liberated bisulfite-ion is then titrated with standard iodine.

6503 SPECIAL COLLECTION APPARATUS FOR SOURCE TESTING -Two Greenburg-Smith impingers, each containing 100 ml of 1% solium bisulfite solution, are connected in a series with tygon tubing. These shall be followed by and coupled to an empty impinger (for meter protection), a dry meter and a source of suction. During sampling, the impingers shall be partially immersed in an ice bath.

6504 COLLECTION REAGENTS: 1% SODIUM BISULFITE - Dissolve 5 grams of sodium bisulfite ($NaHSO_3$) in 500 ml of water.

6505 ANALYTICAL REAGENTS.

6505.1 1% STARCH - Weigh 1 gram of soluble starch into a 150-ml beaker. Add 1 to 2 ml of water and stir to make a paste. In a separate beaker, heat 100 ml of water to boiling and pour into the paste while stirring. (The starch solution should be made fresh daily.)

6505.2 0.05 N SODIUM THIOSULFATE - Dissolve 12.5 grams of sodium thiosulfate ($Na_2S_2O_35H_2O$) in 1 liter of freshly boiled and cooled water. Add 0.1 gram of sodium carbonate as a preservative. (This will retard the slow change of titer which a solution of thiosulfate normally undergoes.) Allow the solution to stand for 24 hours before use. To standardize the thiosulfate proceed as follows:

Dry some potassium dichromate (primary-standard grade) in an oven at 110°C for 1 hour. Cool in a desiccator. Weigh 2.452 grams of the dry dichromate into a 1-liter volumetric flask, and dissolve in about 500 ml of water. Make up to volume with water and mix thoroughly. Pipet exactly 25.00 ml of the solution into a 500 ml Erlenmeyer flask. Pour 25 ml of water into another Erlenmeyer flask for a blank determination. Add 50 ml of water, 10 ml of concentrated hydrochloric acid, and 3 grams of solid potassium iodide to each flask. Swirl each flask once, cover, and place in the dark for 5 minutes. Dilute the solution in each flask with 200 ml of water and titrate with the 0.05 N sodium thiosulfate solution until the brown color is almost discharged. Add 3 ml of starch indicator and titrate to a colorless end point. Subtract the volume of sodium thiosulfate required for the blank titration from the sample titration. The normality of the sodium thiosulfate solution is:

$$\frac{1.25}{V_t}$$

Where:

V_t- milliliters of sodium thiosulfate used for the titration (blank subtracted).

6505.3 0.1 N IODINE - Dissolve 20 to 25 grams of potassium iodide in as little water as possible. Add 12.7 grams of iodine and stir. When dissolved make up to 1 liter with water and store in a dark bottle. This reagent need not be standardized.

6505.4 0.0005 N IODINE - Dilute 50 ml of 0.1 N iodine to 1 liter with water. Standardize daily with the 0.05 N sodium thiosulfate as follows: Pipet 50 ml of the iodine solution into a 250 ml Erlenmeyer flask. Titrate with the 0.05 N sodium thiosulfate until the brown color is almost discharged. Add 3 ml of starch indicator and titrate to a colorless end point. The normality of the iodine solution is

$$0.02\ V_tN_t$$

Where:

V_t= mls of sodium thiosulfate used for the titration
N_t= exact normality of sodium thiosulfate.

6505.5 BUFFER SOLUTION - Dissolve 80 grams of anhydrous sodium carbonate in 500 ml of water. Add 20 ml of glacial acetic acid slowly to avoid excessive frothing. Dilute to 1 liter. Adjust the pH to 9.6 (±0.1) with sodium carbonate or acetic acid as required using a pH meter.

6506 COLLECTION OF THE SAMPLE FOR SOURCE TESTING - Connect the sampling train to a probe and sample at approximately 0.5 to 1.0 cfm. The sampling time will depend on the concentration of carbonyls in the effluent, and shall not be less than 15 minutes.

6507 ANALYTICAL PROCEDURE - Pipet an aliquot from each of the impingers into separate 250 ml Erlenmeyer flasks. The size of the aliquot will depend on the concentration of carbonyls in the effluent. Add 2 ml of 1% starch solution to each flask. Add 0.1 N iodine dropwise until a dark blue color is produced. Care should be taken to see that all of the sulfur dioxide resulting from the decomposition of bisulfite is removed from the vapor space in the flask as it may cause the end point to fade. This can be conveniently accomplished by blowing a small jet of air into the flask while swirling the contents vigorously for several minutes. Decolorize each solution by adding 0.05 N sodium thiosulfate dropwise. Add 0.005 N iodine to a faint blue end point. Cool thoroughly in an ice bath and add 50 ml of chilled buffer to each flask. Allow to stand in the ice bath for 10 to 15 minutes after the buffer addition. Then titrate the liberated bisulfite in each flask with 0.005 N iodine to the same faint blue end point present before addition of the buffer. Keep the sample chilled in order to avoid a fading end point. Make up a blank using the same volume of $NaHSO_3$ as used in the aliquot taken. Titrate as described for sample, and subtract blank value for sample value.

6508 REPORTING AND CALCULATIONS FOR SOURCE TESTING
Total carbonyls expressed as ppm CH_2O =

$$\frac{[\text{Net Titer (ml)}]\left[\dfrac{75 \times \text{normality } KI_3}{0.005}\right]\left[\dfrac{\text{Vol. in impinger(ml)}}{\text{Aliquot taken (ml)}}\right]}{1.2 \times \text{vol. gas sampled (liters)}}$$

(9.0) CHAPTER 6 - USE OF A PORTABLE COMBUSTIBLE GAS INDICATOR FOR PRELIMINARY ESTIMATION OF THE CONCENTRATION OF ORGANIC GASES IN EFFLUENTS

6601 SCOPE - A portable combustible gas indicator may be used to determine concentrations of organic gases in effluents. Indication of concentration of organic gases in excess of 50 ppm as hexane establishes a rebuttable presumption of a violation of this Regulation. The combustible gas indicator shall not be used to test effluents from inceneration or combustion operations.

6602 SPECIFICATIONS FOR THE COMBUSTIBLE GAS INDICATOR - The Combustible Gas Indicator shall operate on the principle that electrical resistance in a given metal wire is a function of the temperature of the wire. The effluent to be tested is drawn across a heated filament. This filament forms one leg of a wheatstone bridge which has been previously balanced in an atmosphere containing no combustible material. The combustion of the sample in the anlyzing chanber raises the temperature and, therefore, the electrical resistance of the filament. The resultant imbalance in the wheatstone bridge circuit causes a current to flow. The current is measured and is a function of the concentration of combustible material present.

6602.1 SENSITIVITY - The Combustible Gas Indicator shall be capable of detecting 50 ppm of hexane with a response equal to or greater than 5% of full scale.

6602.2 POWER SOURCE - The Combustible Gas Indicator shall be equipped with a power source, and a power source condition indicator.

6602.3 DRIFT - The zero adjustment shall be sufficiently stable as to be drift-free during the course of a reading.

6602.4 FILTER - The Combustible Gas Indicator shall have a filter which effectively removes water vapor, but does not remove organic gases.

6602.5 ASPIRATOR - The Combustible Gas Indicator shall be equipped with a suction device to draw samples of effluent through the filament chamber continuously while sampling is being performed.

6603 CALIBRATION - The Combustible Gas Indicator shall be calibrated by sampling inert air streams containing known concentrations of hexane, and a calibration chart constructed relating concentration and meter reading.

6604 USE OF THE COMBUSTIBLE GAS INDICATOR INSTRUMENT - The Combustible Gas Indicator shall be connected to or placed in the effluent. The sampling tube shall be constructed of inert material. The instrument shall be operated under standard conditions, and readings shall be taken until needle deflection stabilizes and remains constant for 30 seconds. If the needle deflection does not stabilize, the indicator shall be read at maximum deflection. This reading shall be used to calculate the concentration of organic gases in the effluent.

6605 CALCULATION - The reading obtained in the gas stream shall be converted to ppm hexane by reference to the calibration graph.

6606 LIMITATION - A reading of 50 ppm hexane or less shall be construed to indicate that the unit being tested is in compliance with this Regulation.

(9.0)

CHAPTER 7 - PROCEDURE FOR DETERMINING HEAD SPACE REACTIVITY IN THE ABSENCE OF OXYGENATED ORGANIC COMPOUNDS

6701 SCOPE - This procedure describes a method for the determination of olefins plus substituted aromatics in the head space of liquids stored in containers, and which liquids have an olefin plus substituted aromatic content greater than 5% in the liquid as determined in Chapter 4, Division 6, and which liquids do not have oxygenated organic compounds present as determined in Chapter 10, Division 6, Benzene, if present, is measured separately and subtracted from the total.

6702 OUTLINE OF METHOD - A sample of head space is reacted with a sulfonation acid in a standard Orsat type apparatus. The diminution of volume is proportional to the olefin plus substituted aromatic content of the sample.

6703 REAGENTS - Same as 6403.

6704 APPARATUS - Any Orsat type apparatus used for the analysis of combustion gases may be used.

6705 PROCEDURE - The standard Orsat apparatus is modified by placing a tube (2" x ¼") containing Mallcosorb (Mallinckrodt) between the measuring unit and the absorption chamber to remove acidic gases formed during the sulfonation. The liquid sample is maintained at 100°F and care shall be taken that the head space gases shall be in equilibrium with the liquid phase. (In practice, the head space sample is taken from the apparatus used to determine Reid vapor pressure.)

The absorption chamber is filled with sulfonation acid. A 50-100 ml. sample of head space vapor is diluted to 100 ml. with air, and is transferred to the gas measuring column by means of a syringe. The gas is passed twice through the sulfonation acid and the residual volume measured by the standard Orsat techniques.

6706 CALCULATIONS - Percent olefins plus substituted aromatics in head space = 100 - residual volume. (Correct for dilution of sample.)

Head space reactivity (percent olefins plus substituted aromatics in hydro-carbon portion of the head space vapors) =

$$\frac{(100 - \text{residual volume})}{\left[\frac{(\text{Reid V.P.})}{(14.7 + \text{Reid V.P.})}\right]}$$

(Correct for dilution of sample.)

(9.0)(50.4) CHAPTER 8 - PROCEDURE FOR DETERMINING OLEFINS AND SUBSTITUTED AROMATICS IN ORGANIC LIQUIDS AND FOR DETERMINING HEAD SPACE REACTIVITY IN THE PRESENCE OF OXYGENATED ORGANIC COMPOUNDS

6801 SCOPE - This procedure describes a method for determining olefins and substituted aromatics in liquids or vapors containing oxygenated compounds.

6802 OUTLINE OF METHOD FOR LIQUIDS - A sample of liquid is injected into a gas chromatograph using a column which is capable of resolving olefins and sustituted aromatics from other organic compounds.

6803 SPECIFICATIONS FOR GAS CHROMATOGRAPHIC EQUIPMENT - Same as 6303.

6804 CALIBRATION - Known quantities of olefins and substituted aromatics are injected into the gas chromatograph and graphs relating quantity and peak height constructed.

6805 PROCEDURE - A sample of 1 - 5 μl of liquid is injected into the gas chromatograph and resultant peaks recorded. The peaks corresponding to olefins and substituted aromatic compounds are identified from times for known standards treated in the same manner.

6806 CALCULATION - The concentration of each of the olefin and substituted aromatic compounds is calculated from the calibration curve previously prepared. The total percent olefins plus substituted aromatics is equal to the sum of the percents of individual olefins and substituted aromatics present in the liquid.

6807 OUTLINE OF METHOD: HEAD SPACE REACTIVITY - A sample of vapor in equilibrium with the organic liquid is injected into a gas chromatograph using a column which is capable of resolving olefins and substituted aromatics from other organic compounds.

6808 PROCEDURE AND CALCULATIONS - The procedure and calculations are the same as for liquids, except that samples of 1 to 10 ml. of vapor in equilibrium with liquid are used for analysis.

(9.0)(50.4)CHAPTER 9 - PROCEDURE FOR DETERMINING THE PERCENT ALDEHYDES IN ORGANIC LIQUIDS

6901 SCOPE - This procedure describes a method for determining the percent aldehydes in organic liquids.

6902 OUTLINE OF METHOD - Aldehydes are oxidized by silver oxide to acids. The resulting acid is titrated with standard alkali.

6903 REAGENTS - (a) silver oxide, (b) 0.5 N NaOH, (c) 0.1 N HCl, (d) dioxane free of acid.

6904 PROCEDURE - Place a weighed sample containing up to 5 millimoles of aldehyde in a 100 ml glass stoppered volumetric flask containing 3 gm of silver oxide. Add 50 ml of a 1=1 mixture of water and dioxane.

Prepare a blank exactly as above, omitting the aldehyde.

Stopper the flasks and place in a water bath at 60°C. Shake every 5 or 10 minutes for one hour. Cool to room temperature, add 25.0 ml 0.5 N NaOH, dilute to 100 ml, shake and filter. Titrate 25 ml aliquots with 0.1 N HCl to phenolphthalein end point.

6905 CALCULATION - Subtract the value of the blank and calculate the equivalents of NaOH used up by the acid formed in the oxidation of the aldehyde. Determine the weight of aldehyde present, using benzaldehyde (or the specific aldehyde, if known) as the representative aldehyde.

$$\%\ \text{aldehyde} = \left[\frac{\text{weight of aldehyde found}}{\text{weight of sample taken}}\right] 100$$

(9.0) CHAPTER 10 - TEST FOR OXYGENATED ORGANIC COMPOUNDS IN ORGANIC LIQUIDS

61001 SCOPE - This test shall be used to determine the presence of oxygenated organic compounds in organic liquid samples.

61002 OUTLINE OF METHOD - This method is based on the fact that oxygenated organic compounds dissolve ferric hexathiocyanatoferriate (Ferrox) from a prepared paper saturated with the reagent to produce an intense pink color.

61003 REAGENTS - Ferrox Paper. Dissolve 0.3 gm ferric ammonium sulfate in 5 ml H_2O and add 0.5 gm potassium thiocyanate. Stir and soak strips of filter paper in the solution for 5 minutes. Remove the paper, dry and cut into squares 1 cm x

1 cm. Store in a brown, covered bottle.

61004 PROCEDURE - Place a ¼" square of Ferrox paper at the bottom of a 1/2" x 6" test tube, and add 2 ml of liquid to be tested. Shake gently and observe color at the end of 1 minute. Presence of oxygenated organic compounds is indicated by the formation of a deep pink color in the liquid layer.

(9.0)(50.4) CHAPTER 11 - TEST FOR OLEFINS IN ORGANIC LIQUIDS

61101 SCOPE - This test shall be used to determine the presence of olefins in organic liquids. An alternate procedure provides for the electrometric titration of olefins with bromide-bromate solution.

61102 OUTLINE OF METHOD - The sample is dissolved in carbon tetrachloride and treated with an excess of bromide-bromate solution. The excess bromine is reduced with potassium iodide and the liberated iodine determined by thiosulfate titration.

61103 PROCEDURE - The procedure, reagents and calculations shall be performed as described in ASTM D1158-59T or ASTM D1159-64 relating to Bromine Number of Petroleum Distillates.

(9.0) (51.21) CHAPTER 12 - DETERMINATION OF VOLUME PERCENT REACTIVE ORGANIC COMPOUNDS IN PAINT, VARNISH, LACQUER OR OTHER SURFACE-COVERING MATERIALS AND SOLVENTS

61201 SCOPE - This procedure describes a method for the determination of reactive organic compounds in paints, varnishes, lacquers or other surface-covering materials and solvents. Benzene, if present, is measured separately and subtracted from the total. For water-thinned materials refer to Section 61206.

61202 OUTLINE OF METHOD - The volatile materials are separated from non-volatile materials by steam distillation. The reactives in the volatile, water immiscible portion are determined by gas chromatography or by sulfonation. The quantity of volatile, water miscible organic solvent remaining in the water layer of the distillate is determined by gas chromatography or other standard procedures, and added to the total volume of solvent for calculation of percent reactives.

61203 DESCRIPTION OF APPARATUS - Same 6303 for gas chromatographic analysis, and same as 6404 for sulfonation procedure.

61204 ANALYTICAL PROCEDURE - A weighed sample of surface-covering material is steam distilled until a volume of distillate 4 times the volume of original sample taken is collected. The immiscible solvent layer in the distillate is separated from the water and dried with anhydrous Na_2SO_4. The volume and weight of the solvent layer is measured by standard procedures.

Test for the presence of oxygenated organic compounds as described in 61001 ff.

If oxygenated organic compounds are found, analyze the solvent by gas chromatography as described in 6801 ff.

If no oxygenated organic compounds are found, analyze the solvent by sulfonation procedure described in 6401 ff.

The density of the original surface-covering material is measured separately by standard procedures.

61205 CALCULATION - Percent by volume of olefins and substituted aromatics is calculated as described below.

A. If the direct sulfonation procedure is used (6401 ff): Calculation is the same as 6405.

B. If the gas chromatographic procedure is used (6801 ff): Calculation is the same as 6806.

Results are reported as percent by volume olefins and substituted aromatics.

61206 OUTLINE OF METHOD FOR WATER-THINNED SURFACE COATINGS AND SOLVENTS For surface coatings and solvents which contain water as part of the coating or solvent, the quantity of water present in the material shall be determined by the procedure described in ASTM D95-58, and this quantity shall be added to the quantity of organic solvent present to determine the total volume of solvent. In calculating the volume percent of reactives in the emissions the total volume of water and organic solvent shall be used in the calculation.

(9.0) CHAPTER 13 - TEST TO DETERMINE PERCENT REDUCTION OF REACTIVE ORGANIC GAS EMISSIONS BY AN ABATEMENT DEVICE

61301 SCOPE - This procedure shall be used to determine the percent reduction of reactive organic gases by an abatement device.

61302 OUTLINE OF METHOD - The following tests are performed at the inlet and outlet of the abatement device in accordance with standard engineering test procedures described in Division 5.

61302.1 Total olefins and substituted aromatics are determined by gas chromatography as described in Chapter 3, Division 6.

61302.2 Total carbonyls are collected by the bisulfite procedure described in Chapter 5, Division 6. The aldehyde fraction of the total carbonyl collection is determined by the chromotropic acid method described in 61303.

61303 DETERMINATION OF ALDEHYDES

61303.1 REAGENTS - Chromotropic Acid: 0.5% in water. Filter just before using. Stable for one week if kept refrigerated.
Sulfuric Acid: Concentrated reagent grade.

61303.2 PROCEDURE - Transfer a 2.0 ml aliquot from each impinger to a separate 25 ml graduated tube. Add to each 0.2 ml of chromotropic acid, and then cautiously add 5.0 ml of concentrated sulfuric acid. Mix well. Transfer to a boiling water bath, and heat for 15 minutes. Cool the samples and then add distilled water to the 10 ml mark. Cool, mix, and transfer to a 16 mm cuvette, reading the transmittance at 580 mμ. A blank containing 2 ml of 1% sodium bisulfite should be run along with the samples and used to zero the colorimeter. From standard curve read micrograms of formaldehyde.

61303.3 PREPARATION OF STANDARD CURVE - To a 1 L volumetric flask add 0.4466 grams of sodium formaldehyde bisulfite. Dilute to mark with water. This solution contains 0.1 mg of formaldehyde per ml. Dilute this stock so as to have standard solutions containing 1, 3, 5 and 7 micrograms of formaldehyde per ml. Set up the above standards plus blank, using the procedure as described in 1, above, Take respective readings at 580 mμ after setting instrument at 100% T with the blank. Using semi-log paper graph the respective concentrations vs. transmittance.

61303.4 CALCULATION FOR ALDEHYDES

ppm aldehyde (CH_2O) =

$$\left[\frac{\text{micrograms from graph x total vol. of impinger}}{\text{1.23 x sample vol. in liters x 2}}\right]$$

61304 CALCULATION OF EFFICIENCY OF ABATEMENT DEVICE - The total quantity of reactive organic compounds at the inlet and outlet of the device is determined as described above.

$$\frac{A-B}{A} \times 100 = \text{Percent Efficiency}$$

where:

A = Total quantity of reactives at the inlet.
B = Total quantity of reactives at the outlet.

BAY AREA AIR POLLUTION CONTROL DISTRICT

(2.0) REGULATION 4

A regulation of the Bay Area Air Pollution Control District requiring the installation of crankcase devices on 1955 through 1962 model year motor vehicles within the District.

The Board of Directors of the Bay Area Air Pollution Control District does hereby enact as follows:

Section 1 - Every 1955 through 1962 model year motor vehicle subject to registration in this State, upon either transfer of ownership and registration to an owner whose residence is in any county in which the Bay Area Air Pollution Control District transacts business or exercises its powers on the effective date of this regulation, or upon registration of a vehicle previously registered outside this State to an owner whose residence is in any county in which the Bay Area Air Pollution Control District transacts business or exercises its powers on the effective date of this regulation, shall be equipped with a device certified by the State Air Resources Board to control the emission of pollutants from the crankcase.

Section 2 - This regulation shall take effect and be in force on June 1, 1971.

(2.0) REGULATION 6

The Air Pollution Control Officer and every officer and employee of the Bay Area Air Pollution Control District designated by him is authorized to arrest a person without a warrant whenever he has committed, in his presence, a violation of any provision of the Vehicle Code which the Air Pollution Control Officer is authorized by law to enforce. This authority to arrest is granted in accordance with Penal Code Section 836.5.

REGULATION 7

(10.0) NEW SOURCE PERFORMANCE STANDARDS

(1.0) DEFINITIONS

"Affected facility" means any apparatus to which a standard is applicable. (60.2(e))

"Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification. (60.2(i))

"Construction" means fabrication, erection, or installation of an affected facility. (60.2(g))

"Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. (60.2(q))

"Modification" means any physical change in, or change in the method of operation of, an affected facility which increases the amount of any air pollutant (to which a standard applies) emitted by such facility or which results in the emission of any air pollutant (to which a standard applies) not previously emitted, except that:

1. Routine maintenance, repair, and replacement shall not be considered physical changes, and

2. The following shall not be considered a change in the method of operation:

   (a) An increase in the production rate, if such increase does not exceed the operating design capacity of the affected facility:

   (b) An increase in hours of operation;

   (c) Use of an alternative fuel or raw material if, prior to the date any new source performance standard under 40 CFR 60 becomes applicable to such facility, the affected facility is designed to accommodate such alternative use. (60.2(h))

"Owner or operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part. (60.2(f))

"Shutdown" means the cessation of operation of an affected facility for any purpose. (60.2(p))

"Startup" means the setting in operation of an affected facility for

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Numbers in parenthesis refer to Sections in Title 40 Code of Federal Regulations, Parts 60 and 61, the documents in which the new source performance standards and national emission standards for hazardous air pollutants are promulgated.

any purpose. (60.2 (o))

RULE 1

(2.0) GENERAL PROVISIONS NEW SOURCE PERFORMANCE STANDARDS

(10.0) A.

1. Any owner or operator subject to the provisions of these rules and regulations shall furnish the control officer written notification as follows:

   (a) A notification of the anticipated date of initial startup of an affected facility not more than 60 days or less than 30 days prior to such date.

   (b) A notification of the actual date of initial startup of an affected facility within 15 days after such date. (60.7(a))

2. Any owner or operator subject to the provisions of these rules and regulations shall maintain for a period of 2 years a file of all measurements, including monitoring and performance testing measurements, and all other reports and records required by a-l applicable subparts.

3. Any owner or operator subject to the provisions of these rules and regulations shall maintain for a period of 2 years a record of the occurrence and duration of any startup, shutdown, or malfunction in operation of any affected facility. (60.7(b))

4. A written report of excess emissions as defined in applicable Rules shall be submitted to the control officer by each owner or operator for each calendar quarter. The report shall include the magnitude of excess emissions as measured by the required monitoring equipment reduced to the units of the applicable standard, the date, and time of commencement and completion of each period of excess emissions. Periods of excess emissions due to startup, shutdown, and malfunction shall be specifically identified. The nature and cause of any malfunction (if known), the corrective action taken, or preventive measures adopted shall be reported. Each quarterly report is due by the 30th day following the end of the calendar quarter. If there were no excess emissions for a quarter a report shall be submitted indicating that there were no excess emissions. (60.7(c)

B.

1. Within 60 days after achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup of such facility and at such other times as may be required by the control officer, the owner or operator of such facility shall conduct performance test(s) and furnish the control officer a written report of the results of such performance test(s). (60.8(a)) The control officer may, at his option, conduct the required performance tests.

2. Performance tests shall be conducted and data reduced in accordance with the test methods and procedures prescribed by the Control Officer.

3. Performance tests shall be conducted under such conditions as the control officer shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the control officer such records as may be necessary to determine the conditions of the performance tests. Operations during period of startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable rule. (60.8(c))

4. The owner or operator of an affected facility shall provide the control officer 30 days prior notice of the performance test to afford the Control officer the opportunity to have an observer present. (60.8(d))

5. Each performance test shall consist of three separate runs. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidently lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the control officer's approval, be determined using the arithmetic mean of the results of the two other runs. (60.8(f)

C.

1. Compliance with standards in these rules, other than opacity standards, shall be determined only by performance tests established by paragraph B of this rule, except where performance tests are not specified.

RULE 2

(51.5) (51.6) STANDARDS OF PERFORMANCE FOR FOSSIL FUEL-FIRED STEAM GENERATORS

(51.7) DEFINITIONS

"Fossil fuel-fired steam generating unit" means a furnace or boiler used in the process of burning fossil fuel for the purpose of producing steam by heat transfer. (60.41(a))

"Fossil fuel" means natural gas, petroleum, coal, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat. (60.41(b)).

EMISSION STANDARD

This rule applies to all fossil fuel-fired steam generating units, the construction or modification of which commenced after August 17, 1971, of more than 250 million B.T.U. per hour heat input. Any change to an existing fossil fuel-fired steam generating unit to accommodate the use of combustible materials, other than fossil fuels as defined in this Rule, shall not bring that unit under the applicability of this Rule. If any other Rule or regulation of this District is more restrictive, that rule shall apply.

1. On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which:

    (a) Contain particulate matter in excess of 0.10 lb. per million B.T.U. heat input derived from fossil fuel. (60.42(a))

    (b) Exhibit 20% opacity or greater except that a maximum of 40% opacity shall be permissible for not more than 2 minutes in any one hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this rule. (60.42(a))

2. On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of:

(a) 0.80 lb. per million B.T.U. heat input when liquid fossil fuel is burned. (60.43(a))

(b) 1.2 lbs. per million B.T.U. heat input when solid fossil fuel is burned. (60.43(a))

(c) Where different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\frac{y\,(0.80) + z\,(1.2)}{y + z}$$

where

y is the percent of total heat input derived from liquid fossil fuel,

and

z is the percent of total heat input derived from solid fossil fuel. (60.43(b))

(d) Compliance shall be based on total heat input from all fossil fuels burned, including gaseous fuels. (60.43(c))

3. On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO_2, in excess of:

   (a) 0.20 lb. per million B.T.U. heat input when gaseous fossil fuel burned. (60.44(a))

   (b) 0.30 lb. per million B.T.U. heat input when liquid fossil fuel is burned. (60.44(a))

   (c) 0.70 lb. per million B.T.U. heat input when solid fossil fuel (except lignite) is burned. (60.44(a))

   (d) Where different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\frac{x\ (0.20) + y\ (0.30) + z\ (0.70)}{x + y + z}$$

where:

x is the percent of total heat input derived from gaseous fossil fuel,

y is the percent of total heat input derived from liquid fossil fuel, and

z is the percent of total heat input derived from solid fossil fuel (except lignite). (60.44(b))

MONITORING

1. The owner or operator of any fossil fuel-fired steam generating unit subject to the provisions of this rule shall install, calibrate, maintain and operate emission monitoring instruments as follows:

   (a) A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.

   (b) An instrument for continuously monitoring and recording sulfur dioxide emission, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with paragraph 3. or 4. of this section. Analysis of all fuel received may be substituted for daily fuel analysis if this will assure accurate knowledge of sulfur content of fuel as burned. When fuels must be blended to achieve compliance sulfur analysis of fuels may not be used, and SO_2 emission monitoring is required.

   (c) An instrument for continuously monitoring and recording emissions of nitrogen oxides. (60.45(a))

2. Instruments and sampling systems installed and used pursuant to this section shall be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instruments: instruments shall be subject to manufacturers recommended zero adjustment and calibration procedures at

least once per 24 hour operating period unless manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. (60.45(b))

3. The sulfur content of solid fuels, as burned, shall be determined in accordance with the following methods of the American Society for Testing and Materials.

    (a) Mechanical sampling by Method D 2234-65
    (b) Sample preparation by Method D 2013-65
    (c) Sample analysis by Method D 271-68. (60.45(c))

4. The sulfur content of liquid fuels, as burned, shall be determined in accordance with the American Society for Testing and Materials Methods D 1551-68, or D 129-54, or D 1552-64. (60.45 (d))

5. The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the steam generating unit is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily. (60.45(e))

6. For the purpose of reports required pursuant to Rule 1.A. periods of excess emissions that shall be reported are defined as follows:

    (a) Opacity. All hourly periods during which there are three or more one-minute periods when the average opacity equals or exceeds 20 percent.

    (b) Sulfur dioxide. Any two consecutive hourly periods during which average sulfur dioxide emissions exceed 0.80 pound per million B.T.U. heat input for liquid fossil fuel burning equipment or exceed 1.2 pound per million B.T.U. heat input for solid fossil fuel burning equipment; or for sources which elect to conduct representative analyses of fuels in accordance with paragraph 3. or 4. of this section in lieu of installing and operating a monitory device persuant to paragraph 1.b) of this section, any calendar day during which fuel analysis shows that the limits of paragraph 2 (emission standard) are exceeded.

(c) Nitrogen oxides. Any two consecutive hourly periods during which the average nitrogen oxides emission exceed 0.20 pound per million B.T.U. heat input for gaseous fossil fuel burning equipment, or exceed 0.30 pound per million B.T.U. for liquid fossil fuel burning equipment, or exceed 0.70 pound per million B.T.U. heat input for solid fossil fuel burning equipment. (60.45(g))

TEST PROCEDURE

(See Rule 1.B. for performance test requirements)

Emissions shall be tested according to the method specified in 40 CFR 60.46.

RULE 3

(51.9) STANDARD OF PERFORMANCE FOR INCINERATORS

DEFINITIONS

"Day" means 24 hours. (60.51(c))

"Incinerator" means any furnace used in the process of burning solid waste for the purpose of reducing the volume of the waste by removing combustible matter. (60.51(a))

"Solid waste" means refuse, more than 50 percent of which is municipal type waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles, and noncombustible materials such as glass and rock. (60.51(b))

EMISSION STANDARD

This rule applies to solid waste incinerators, the construction or modification which commenced after August 17, 1971, of more than 50 tons per day charging rate. (60.50)

If any other rule or regulation of this District is more restrictive, the rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1 is completed, no owner or operator of a solid waste incinerator subject to this rule shall cause to be discharged into the atmosphere any gases which contain particulate matter in excess of 0.08 grains per dry standard cubic foot corrected to 12% CO_2. (60.52)

MONITORING

The owner or operator of any incinerator subject to the provisions of this Rule shall record the daily charging rates and hours of operation. (60.53)

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.54.

RULE 4

(51.3) STANDARDS OF PERFORMANCE FOR PORTLAND CEMENT PLANTS

DEFINITIONS

"Kiln feed" means all material except fuels entering the kiln measured on a dry basis. (60.64(c))

"Portland cement plant" means any facility manufacturing portland cement by either the wet or dry process. (60.61(a))

EMISSION STANDARD

This rule applies to the following affected facilities in portland cement plants the construction or modification of which commenced after August 17, 1971: kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems. (60.60)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere;

1. Gases from any kiln which:

    (a) Contain particulate matter in excess of 0.30 lb. per ton of feed to the kiln.

    (b) Exhibit 20% opacity or greater. (60.62(a))

2. Gases from a clinker cooler which:

    (a) Contain particulate matter in excess of 0.10 lb. per ton of feed to the kiln.

    (b) Exhibit 10 percent opacity or greater. (60.62(b))

3. Gases from any affected facility other than the kiln and clinker cooler which exhibit 10 percent opacity or greater. (60.62(c))

4. Where the presence of uncombined water is the only reason for failure to meet the requirements of paragraphs 1.b) and 2.b), and 3, such failure will not be a violation of this section. (60.62(d))

MONITORING

The owner or operator of any portland cement plant subject to the provisions of this Rule shall record the daily production rates and kiln feed rates. (60.63)

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.64.

RULE 5

(51.10) STANDARD OF PERFORMANCE FOR NITRIC ACID PLANTS

DEFINITIONS

"Nitric acid production unit" means any facility producing weak nitric acid by either the pressure or atmospheric pressure process. (60.71(a))

"Weak nitric acid" means acid which is 30 to 70 percent in strength. (60.71(b))

EMISSION STANDARD

This rule applies to nitiric acid plants, the construction or modifiction of which commenced after August 17, 1971. (60.70)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1 is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which:

1. Contain nitrogen oxides, expressed as NO_2, in excess of 3 lbs. per ton of acid produced, the production being expressed as 100% nitric acid. (60.72(a))
2. Exhibit ten percent opacity or greater. Where the presence of uncombined water is the only reason for failure to meet this requirement, such failure shall not be considered a violation of this rule. (60.72(a))

MONITORING

The owner or operator shall install, calibrate, maintain, and operate in any nitric acid production unit subject to the provisions of this Rule, an instrument for continuously monitoring and recording emissions of nitrogen oxides. (60.73(a))

The instrument and sampling system installed and used pursuant to this section shall be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per 24 hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals in which case such specifications or recommendations shall be followed. (60.73(b))

Production rate and hours of operation shall be recorded daily. (60.73(c)) (60.73(c))

For the purpose of making written reports pursuant to Rule 1.A. periods of excess emissions that shall be reported are defined as any two consecutive hourly periods during which average nitrogen oxides emissions exceed 3 pounds per ton of acid produced. (60.73(e))

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.74.

RULE 6

(51.18) STANDARD OF PERFORMANCE FOR SULFURIC ACID PLANTS

DEFINITIONS

"Acid mist" means sulfuric acid mist, as measured by test methods set forth in these rules and regulations or equivalent or alternative methods. (60.81(b))

"Sulfuric acid production unit" means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds. (60.81(a))

EMISSION STANDARD

This rule applies to sulfuric acid plants, the construction or modification of which commenced after August 17, 1971.

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which:

1. Contain of sulfur dioxide in excess of 4 lb. per ton of acid produced, the production being expressed as 100% H_2SO_4; (60.82)
2. Contain of acid mist, expressed as H_2SO_4; in excess of 0.15 lb. per ton of acid produced, the production being expressed as 100% H_2SO_4; (60.83(a))
3. Exhibit 10 percent opacity or greater. Where the presence

uncombined water is the only reason for failure to meet this requirement, such failure shall not be considered a violation of the Rule (60.83(a)).

MONITORING

The owner or operator shall install, calibrate, maintain, and operate, in any sulfuric acid production unit subject to the provisions of this subpart, an instrument for continuously monitoring and recording emissions of sulfur dioxide. (60.84(a))

The instrument and sampling system installed and used pursuant to this section shall be capable of monitoring emission levels within ± percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subject to manufacturers recommended zero adjustment calibration procedures at least once per 24-hour operating period unless the manufacturer(s) specified or recommends calibration at shorter intervals, in which case such specifications or recommendation shall be followed. (60.84(b))

Production rate and hours of operation shall be recorded daily. (60.84(c))

For the purpose of making written reports pursuant to Rule 1.A. periods of excess emissions that shall be reported are defined as any two consecutive hourly periods during which average sulfur dioxide emissions exceed 4 pounds per ton of acid produced. (60.84(e))

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.85.

RULE 7

(51.8) STANDARD OF PERFORMANCE FOR ASPHALT CONCRETE PLANTS

DEFINITIONS

"Asphalt concrete plant" means any facility, as described below, used to manufacture asphalt concrete by heating and drying aggregate and mixing with asphalt cement. (60.91(a))

EMISSION STANDARD

This rule applies to asphalt concrete plants, the construction or modification of which commenced after June 11, 1973. For the purpose of this rule, an asphalt concrete plant is comprised only of any combination of the following: Dryers: systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems. (60.90)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which:

1. Contain particulate matter in excess of 0.04 gr/dscf (60.92(a)(1))

2. Exhibit 20 percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this Rule. (60.92(a)(2))

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.93.

RULE 8

(51.15) STANDARD OF PERFORMANCE FOR PETROLEUM REFINERIES

DEFINITIONS

"Coke burn-off" means the coke removed from the surface of the fluid catalytic cracking unit catalyst by combustion in the catalyst regenerator. The rate of coke burn-off is calculated by the formula specified in 40 CFR 60.106. (60.101(h))

"Fuel gas" means any gas which is generated by a petroleum refinery process unit and which is combusted, including any gaseous mixture of natural gas and fuel gas which is combusted. (60.101(d))

"Fuel gas combustion device" means any equipment, such as process heaters, boilers and flares used to combust fuel gas, but does not include fluid coking unit and fluid catalytic cracking unit incinerator-waste heat boilers or facilities in which gases are combusted to produce sulfur or sulfuric acid. (60.101(g))

"Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal. (60.101(b))

"Petroleum refiner" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking or reforming of unfinished petroleum derivatives. (60.101(a))

"Process gas" means any gas generated by a petroleum refinery process unit, except fuel gas and process upset gas as defined in these definitions. (60.101(c))

"Process upset gas" means any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction. (60.101(e))

"Refinery process unit" means any segment of the petroleum refinery in which a specific processing operation is conducted. (60.101(f))

EMISSION STANDARD

This rule applies to the following affected facilities in petroleum refineries: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers, and fuel gas combustion devices, the construction or modification of which commenced after June 11, 1973.

If any other rule or regulation of this District is more restrictive, that rule shall apply.

1. On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere:

   (a) From any fluid catalytic cracking unit catalyst regenerator or from any fluid catalytic cracking unit incinerator-waste heat boiler:

      (1) Particulate matter in excess of 1.0 lb/1000 lbs. of coke burn-off in the catalyst regenerator. (60.102(a)(1))

(2) Gases which exhibit 30 percent opacity or greater, except for 3 minutes in any one hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this subparagraph, such failure shall not be a violation of this rule. (60.102(a)(2))

(3) In those instances in which auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler, particulate matter in excess of that permitted by subparagraph 1.a) (1) of this rule may be emitted to the atmosphere except that the incremental rate of particulate emissions shall not exceed 0.10 lb/million B.T.U. of heat input attributable to such liquid or solid fuel. (60.102(b))

(b) From the fluid catalytic cracking unit catalyst regenerator any gases which contain carbon monoxide in excess of 0.050 percent by volume. (60.103(a))

2.

(a) On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this rule shall burn in any fuel gas combustion device any fuel gas which contains H_2S in excess of 0.10 gr/dscf, except as provided in subparagraph (b) of this paragraph. The combustion process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this paragraph. (60.104(a))

(b) The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of SO_2 to the atmosphere if it is shown to the satisfaction of the control officer that this prevents SO_2 emissions as effectively as compliance with the requirements of subparagraph (a) of this paragraph. (60.104(b)

MONITORING

1. The owner or operator of any petroleum refinery subject to the provisions of this subpart shall install, calibrate,

maintain, and operate monitoring instruments as follows: (60.105)

(a) A photoelectric or other type smoke detector and recorder to continuously monitor and record the opacity of gases discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator.

(b) An instrument for continuously monitoring and recording the concentration of CO in gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerators, except where the requirements of paragraph 1c of this monitoring section are met.

(c) Instruments for continuously monitoring and recording firebox temperature and O_2 concentration in the exhaust gases from any incinerator-waste heat boiler which combusts the exhaust gases from a fluid catalytic cracking unit catalyst regenerator except where the requirements of paragraph 1b of this monitoring section are met.

(d) An instrument for continuously monitoring and recording concentrations of H_2S in fuel gases burned in any fuel gas combustion device, except where the requirements 2 b of the emission standard are met. Fuel gas combustion devices having a common source of fuel gas may be monitored at one location if sampling at this location produces results representative of the H_2S concentration in the fuel gas burned.

(e) An instrument for continuously monitoring and recording concentrations of SO_2 in the gases discharged into the atmosphere from the combustion of fuel gases except where the requirements of 2 a of the emission standard are met.

2. Instruments and sampling systems installed and used pursuant to this section shall meet specifications prescribed by the control officer and each instrument shall be calibrated in accordance with the method prescribed by the manufacture of such instrument. The instruments shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case such specification or recommendations shall be followed.

3. The average coke burn-off rate (thousands of kilogram/hr) and hours of operation for any fluid catalytic cracking unit catalyst regenerator subject to paragraph 1 (a) or 1 (b) of the emission standard shall be recorded daily.

4. For any fluid catalytic cracking unit catalyst regenerator which is subject to paragraph 1 (a) of the emission standard and which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator, the owner or operator shall record daily the rate of combustion of liquid or solid fossil fuels (liters/hr or kilograms/hr) and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator-waste heat boiler.

5. For the purpose of reports pursuant to Rule 1A, periods of excess emissions that shall be reported are defined as follows:

   (a) Opacity - all hourly periods in which there are 4 or more one-minute periods during which the average opacity of the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to paragraph 1 (a) in the emissions standard equals or exceeds 30%.

   (b) Carbon Monoxide - all hourly periods during which the average carbon monoxide concentration in the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to paragraph 1 (b) of the emissions standard exceeds 0.050% by the volume; or any hourly average in which the O_2 concentration and the fire box temperature measurements indicate that the average concentration of CO in the gases discharged into the atmosphere exceeds 0.050% by volume for sources which combust the exhaust gases from any fluid catalytic cracking unit catalyst regenerator subject to paragraph 1 (b) of the emissions standard in an incinerator waste heat boiler and for which the owener or operator elects to monitor in accordance with paragraph 1 (c) of this monitoring section.

   (c) Hydrogen sulfide - all hourly periods during which the average hydrogen sulfide content of any fuel gas combusted in any fuel gas combustion device subject to paragraph 2 (a) of the emissions standard exceeds 0.10 gr/dscf except where the requirements of paragraph 2 (b) of the emissions standard are met.

(d) Sulfur dioxide - all hourly periods during which the average sulfur dioxide emissions discharged into the atmosphere from any fuel gas combustion device subject to paragraph 2 of the emission standard exceed the level specified in paragraph 2 (b) of the emission standard except where the requirements of paragraph 2 (a) of the emission standard are met.

TESTING PROCEDURE

(See Rule 1.b. for performance test requirements)

Emissions shall be tested according to the method specified in 40 CFR 60.106.

RULE 9

(51.16) STANDARD OF PERFORMANCE FOR STORAGE VESSELS FOR PETROLEUM LIQUIDS

DEFINITIONS

"Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions. (60.111(f))

"Custody transfer" means the transfer of produced petroleum and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation. (60.111(g))

"Drilling and production facility" means all drilling and servicing equipment, wells, flow lines, separators, equipment, gathering lines, and auxiliary non-transportation-related equipment used in the production of petroleum but does not include natural gasoline plants. (60.111(h))

"Floating roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and tank wall. (60.111(j))

"Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen. (60.111(e))

"Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal. (60.111(d))

"Petroleum liquids" means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Numbers 2 through 6 fuel oils as specified in ASTM-D-396-69, gas turbine fuel oils Numbers 2-GT through 4-GT as specified in ASTM-D-975-68. (60.111(b))

"Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives. (60.111(c))

"Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum liquids, except liquified petroleum gases, as determined by ASTM-D-323-58 (reapproved 1968). (60.111(1))

"Storage vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:

1. Pressure vessels which are designed to operate in excess of 15 pounds per square inch guage without emissions to the atmosphere except under emergency conditions.
2. Subsurface caverns or porous rock reservoirs, or
3. Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank. (60.111(a))

"True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517 "Evaporation Loss From Floating Roof Tanks," 1962. (60.111(i))

"Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere. (60.111(k))

EMISSION STANDARD

This rule applies to storage vessels for petroleum liquids the construction or modification of which commenced after March 8, 1974, of more than 40,000 gallons storage capacity except it shall not apply to storage vessels for petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer. (60.110 (a) and (b))

If any other rule or regulation of this District is more restrictive, that rule shall apply.

The owner or operator of any storage vessel to which this rule applies shall store petroleum liquids as follows:

1. If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm Hg (1.5 psia) but not greater than 570 mm Hg (11.1 psia) the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents. (60.112(a)(1))
2. If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its

equivalent. (60.112(a)(2))

MONITORING

The owner or operator of any storage vessel to which this rule applies shall for each such storage vessel maintain a file of each type of petroleum liquid stored, of the typical Reid vapor pressure of each type of petroleum liquid stored, and of the dates of storages. Dates on which the storage vessel is empty shall be shown. (60.113(a))

The owner or operator of any storage vessel to which this rule applies shall for each such storage vessel determine and record the average monthly storage temperature and true vapor pressure of the petroleum liquid stored at such temperature if:

1. The petroleum liquid has a true vapor pressure, as stored, greater than 26 mm Hg (0.5 psia) but less than 78 mm Hg (1.5 psia) and is stored in a storage vessel other than one equipped with a floating roof, a vapor recovery system or their equivalents; or

2. The petroleum liquid has a true vapor pressure, as stored, greater than 470 mm Hg (9.1 psia) and is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent. (60.113(b))

The average monthly storage temperature is an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every 7 days. (60.113(c))

The true vapor pressure shall be determined by the procedures in API Bulletin 2517. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the control officer requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, that Reid vapor pressure may be used. For other liquids, supporting anlytical data must be made available on request to the control officer when typical Reid vapor pressure is used. (60.113(d))

RULE 10

(51.17) STANDARD OF PERFORMANCE FOR SECONDARY LEAD SMELTERS

DEFINITIONS

"Lead" means elemental lead or alloys in which the predominant component is lead. (60.121(c))

"Reverberatory furnace" includes the following types of reverberatory furnaces: stationary, rotating, rocking, or tilting. (60.121(a))

"Secondary lead smelter" means any facility producing lead from a lead-bearing scrap material by smelting to the metallic form. (60.121(b))

EMISSION STANDARD

This rule applies to the following facilities in secondary lead smelters, the construction or modification of which commenced after June 11, 1973: pot furnaces of more than 550 pound charging capacity, (60.120) blast (cupola) furnaces, and reverberatory furnaces.

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator of a facility subject to the provisions of this rule shall cause to be discharged into the atmosphere:

1. From a blast (cupola) or reverberatory furnace any gases which:
   (a) Contain particulate matter in excess of 0.022 gr/dscf. (60.122(a)(1))

   (b) Exhibit 20 percent opacity or greater. (60.122(a)(2))

2. From pot furnaces any gases which exhibit 10 percent opacity or greater. (60.122(b))

Where the presence of uncombined water is the only reason for failure to meet the requirements of paragraphs 1.b and 2 of this rule, such failure shall not be a violation of this rule. (60.122(c))

MONITORING

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements)

Emissions shall be tested according to the method specified in 40 CFR 60.123.

RULE 11

(51.17) STANDARD OF PERFORMANCE FOR SECONDARY BRASS AND BRONZE INGOT PRODUCTION PLANTS

DEFINITIONS

"Blast furnace" means any furnace used to recover metal for slag. (60.131(d))

"Brass or bronze" means any metal alloy containing copper as its predominant constituent, and lesser amounts of zinc, tin, lead, or other metals. (60.131(a))

"Electric furnace" means any furnace which uses electricity to produce over 50 percent of the heat required in the production of refined brass or bronze. (60.131(c))

"Reverberatory furnace" includes the following types of reverberatory furnaces: stationary, rotating, rocking or tilting. (60.131(b))

EMISSION STANDARD

This rule applies to the following facilities in secondary brass and bronze ingot production plants, the construction or modification of which commenced after June 11, 1973: reverberatory and electric furnaces of 2205 lb or greater production capacity and blast (cupola) furnaces of 550 lb/hour or greater production capacity. (60.130)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator of a subject to the provisions of this rule shall cause to be discharged into the atmosphere:

(a) From a reverberatory furnace any gases which:

(1) Contain particulate matter in excess of 0.022 gr/dscf (60.132(a)(1))

(2) Exhibit 20 percent opacity or greater. (60.132(a)(2))

(b) From any blast (cupola) or electric furnace any gases which exhibit 10 percent opacity or greater. (60.132(b))

Where the presence of uncombined water is the only reason for failure to meet the requirements of Rule 11 a (2) and 11 b, such failure shall not be a violation of this rule. (60.132(c))

MONITORING

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements)

Emissions shall be tested according to the method specified in 40 CFR 60.134.

RULE 12

(51.4) STANDARD OF PERFORMANCE FOR IRON AND STEEL PLANTS

DEFINITIONS

"Basic oxygen process furnace" means any furnace producing steel by charging scrap steel, hot metal, and flux materials into a vessel and introducing a high volume of an oxygen - rich base. (60.141(a))

"Steel production cycle" means the operations required to produce each batch of steel and includes the following major functions: scrap charging, preheating (when used), hot metal charging, primary oxygen blowing, additional oxygen blowing (when used) and tapping. (60.141(b))

EMISSION STANDARD

This rule applies to basic oxygen process furnaces of iron and steel plants, the construction or modification of which commenced after June 11, 1973. (60.140)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.022 gr/dscf. (60.142(a)(1))

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements)

Emissions shall be tested according to the method specified in 40 CFR 60. 144

RULE 13

(51.9) STANDARD OF PERFORMANCE FOR SEWAGE TREATMENT PLANTS

DEFINITIONS (Not promulgated in the Federal Register)

"Sewage" means the spent water of a community consisting of a combination of liquid- and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present. (60.151(d))

"Sewage sludge" means the solid waste byproduct of municipal sewage treatment processes, including any solids removed in any unit operation of such treatment process. (60.151(b))

"Sewage sludge incinerator" means any combustion device used in the process of burning sewage sludge for the primary purpose of solids sterilization and to reduce the volume of waste by removing combustible matter, but does not include portable facilities or facilities used solely for burning scum or other floatable materials, recalcining lime, or regenerating activated carbon. (60.151(a))

"Sewage treatment plant" means any arrangement of devices and structures for the treatment of sewage and all appurtenances used for treatment and disposal of sewage and other waste byproducts. (60.151(c))

EMISSION STANDARD

This rule applies to municipal sewage treatment sludge incinerators the construction or modification of which commenced after June 11, 1973. (60.150)

If any other rule or regulation of this district is more restrictive, that rule shall apply.

On and after the date on which the performance test required to be conducted by Rule 1.B.1. is completed, no owner or operator subject to the provisions of this Rule shall cause to be discharged into the atmosphere from an affected facility any gases which:

1. Contain particulate matter at a rate in excess of 1.30 lb/ton of dry sludge input. (60.152(a))

2. Exhibit 20 percent opacity or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this subparagraph, such failure shall not be a violation of this rule. (60.152(a))

MONITORING

The owner or operator of any sludge incinerator subject to the provisions of this rule shall:

1. Install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall have an accuracy of ± 5 percent over its operating range. (60.153(a)(1))

2. Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained. (60.153(a)(2))

TESTING PROCEDURE

(See Rule 1.B. for performance test requirements.)

Emissions shall be tested according to the method specified in 40 CFR 60.154.

REGULATION 8

(11.0) EMISSION STANDARDS FOR HAZARDOUS POLLUTANTS

(1.0) DEFINITIONS

"Affected facility" means any apparatus to which a standard is applicable (60.2(e))

"Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time a continuous program of construction or modification. (60.2(i))

"Construction" means fabrication, erection, or installation of an affected facility. (60.2(g))

"Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. (60.2(q))

"Modification" means any physical change in, or change in the method of operation of, an affected facility which increases the amount of any air pollutant (to which a standard applies) emitted by such facility or which results in the emission of any air pollutant (to which a standard applies) not previously emitted, except that:

1. Routine maintenance, repair, and replacement shall not be considered physical changes, and
2. The following shall not be considered a change in the method of operation:
    (a) An increase in the production rate, if such increase does not exceed the operating design capacity of the affected facility:
    (b) An increase in hours of operation:
    (c) Use of an alternative fuel or raw material if, prior to the date any new source performance standard under 40 CFR 60 becomes applicable to such facility, the affected facility is designed to accommodate such alternative use. (60.2(h))

"Owner or operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part. (60.2(f))

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[1] Numbers in parenthesis refer to Sections in Title 40 Code of Federal Regulations, Parts 60 and 61, the documents in which the new source performance standards and national emission standards for hazardous air pollutants are promulgated.

"Shutdown" means the cessation of operation of an affected facility for any purpose. (60.2(p))

"Startup" means the setting in operation of an affected facility for any purpose. (60.2(o))

RULE 1

(2.0) NESHAPS GENERAL PROVISIONS

A. Any owner or operator subject to the provisions of these rules and regulations shall furnish the control officer written notification as follows:

1. A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days prior to such date.
2. A notification of the actual date of initial startup of of the source within 15 days after such date. (61.09)

B.

1. Emission tests may be waived upon written application to the control officer if, in his judgement, the source is meeting the standard.
2. Approval of any waiver granted pursuant to this Rule 1, or pursuant to 40 CFR 61.13, shall not abrogate the control officer's authority under these rules and regulations or in any way prohibit the control officer from later canceling such waiver. Such cancellation will be made only after notice is given to owner or operator of the source. (61.13)

C. Method 101- 102, 103, and 104 in Appendix B of 40 CFR 61 shall be used for all source tests required pursuant to these rules and regulations relating to emission standards for hazardous air pollutants.

RULE 2

(51.21) EMISSION STANDARD FOR ASBESTOS

DEFINITIONS (61.21)

"Asbestos" means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.

"Asbestos material" means asbestos or any material containing asbestos.

"Asbestos mill" means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.

"Asbestos tailings" means any solid waste product of asbestos mining or milling operations which contains asbestos.

"Commercial asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.

"Demolition" means the wrecking or removal of any load-supporting structural member.

"Manufacturing" means the combining of commercial asbestos, or in the case of woven friction products the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in paragraph C.

"Outside air" means the air outside buildings and structures.

"Particulate asbestos material" means finely divided particles of asbestos material.

"Visible emissions" means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.

EMISSION STANDARD

A person shall not cause to be discharged into the atmosphere asbestos in the following amounts from the sources listed:

A. Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in Paragraph F of this rule. (61.22(a))

B. Roadways: The surfacing of roadways with asbestos tailings is prohibited, except for temporary roadways on an area of asbestos ore deposits. The deposition of asbestos tailings on roadways covered with snow or ice is considered "surfacing". (61.22(b))

C. Manufacturing: There shall be no visible emissions to the outside air, except as provided in Paragraph F of this rule, from any building or structure in which the following operations are conducted or directly from any of the following operations if they are conducted outside of buildings or structures.

1. The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

2. The manufacture of cement products.

3. The manufacturing of fireproofing and insulating materials.

4. The manufacture of friction products.

5. The manufacture of paper, millboard, and felt.

6. The manufacture of floor tile.

7. The manufacture of paints, coatings, caulks, adhesives, sealants.

8. The manufacture of plastics and rubber materials.

9. The manufacture of chlorine. (61.22(c))

D. Demolition: Any owner or operator of a demolition operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, installation, or portion thereof which contains any boiler, pipe or load-supporting structural member that is insulated or fireporoofed with friable asbestos material shall comply with the requirements set forth in this paragraph.

1. Written notice of intention to demolish shall be provided to the control officer at least 10 days prior to commencement of such demolition or anytime prior to commencement of demolition subject to paragraph D 3 of this rule. Such notice shall include the following information:

(a) Name of owner or operator.

(b) Address of owner or operator.

(c) Description of the building, structure, facility, or installation to be demolished.

(d) Address or location of the building, structure, facility or installation.

(e) Scheduled starting and completion dates of demolition.

(f) Method of demolition to be employed.

(g) Procedures to be employed to meet the requirements of this paragraph. (61.22(d))

2. The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:

   (a) Friable asbestos materials, used to insulate or fireproof any boiler, pipe, or load-supporting structural member, shall be wetted and removed from any building, structure, facility, or installation subject to this paragraph before wrecking of load-supporting structural members is commenced. Boilers, pipe, or load-supporting structural members that are insulated or fireproofed with friable asbestos materials may be removed as units or in sections without stripping or wetting except that where the boiler, pipe, or load-supporting structural member is cut or disjointed, the exposed friable asbestos materials shall be wetted. Friable asbestos debris shall be wetted adequately to insure that such debris remains wet during all stages of demolition and related handling operations. (61.22(d))

   (b) No pipe or load-supporting structural member that is covered with friable asbestos insulating or fireproofing material shall be dropped or thrown to the ground from any building, structure, facility, or installation subject to this paragraph, but shall be carefully lowered or taken to ground level.

   (c) No friable asbestos debris shall be dropped or thrown to the ground from any building, structure, or installation subject to this paragraph, or from any floor to any floor below. For buildings, structures, facilities or installation, 50 feet or greater in height, friable asbestos debris shall be transported to the ground via dust-tight chutes or containers.

3. Any owner or operator of a demolition operation who intends to demolish a building, structure, facility, or installation to which the provisions of this paragraph would be applicable but which has been declared by proper State or local authority to be structurally unsound and which is in danger of imminent collapse is exempt from the requirements of this paragraph other than the reporting requirements specified by paragraph D 1 of this rule and the

wetting of friable asbestos debris as specified by paragraph D 2 of this rule. (61.22(d)(4))

E. Spraying: There shall be no visible emissions to the outside air from the spray-on application of materials containing more than 1 percent asbestos, on a dry weight basis, used to insulate or fireproof equipment and machinery, except as provided in paragraph F of this rule. Spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits shall contain less than 1 percent asbestos on a dry weight basis.

   1. Any owner or operator who intends to spray asbestos materials to insulate or fireproof buildings, structures, pipes, conduits, equipment, and machinery shall report such intention to the control officer at least 20 days prior to the commencement of the spraying operation. Such report shall include the following information:

      (a) Name of owner or operator

      (b) Address of owner or operator

      (c) Location of spraying operation

      (d) Procedures to be followed to meet the requirements of this paragraph. (61.22(e))

F. Rather than meet the no-visible emission requirements of paragraph A, C and E of this rule, an owner or operator may elect to use the methods specified in paragraph H to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air. (61.22(f))

G. Where the presence of uncombined water is the sole reason for failure to meet the no-visible-emission requirement of paragraphs A, C, or E of this section, such failure shall not be a violation of such emission requirements.

H. If air-cleaning is elected, as permitted by paragraph F, the requirements of this paragraph H must be met.

   1. Fabric filter collection devices must be used, except as noted in subparagraphs 2 and 3 of this paragraph. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability, as determined by ASTM method D737-69, must not exceed 30 $ft^3/min/ft^2$ for woven fabrics or 35 $ft^3/min/ft^2$ for felted fabrics, except that 40 $ft^3/min/ft^2$ for woven and 45 $ft^3/$

min/ft^2 for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun. (61.23(a))

2. If the use of fabric filters creates a fire or explosion hazard, the control officer may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gage pressure. (61.23(b))
3. The control officer may authorize the use of filtering equipment other than that described in subparagraphs 1 and 2 of this paragraph if the owner or operator demonstrates to the satisfaction of the control officer that the filtering of particulate asbestos material is equivalent to that of the described equipment. (61.23(c))
4. All air-cleaning equipment authorized by this rule must be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material. (61.23(d))

If any other rule or regulation of this district is more restrictive, that rule shall apply.

REPORTING

The owner or operator of any existing source to which this rule is applicable shall, within 90 days after the effective date, provide the following information to the control officer:

1. A description of the emission control equipment used for each process. (61.24(a))
2. If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage.
   (a) If the fabric filter device utilizes a woven fabric, the airflow permeability in ft^3/min/ft^2; and, if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.

   (b) If the fabric filter device utilizes a felted fabric, the density in oz/yd^2, the minimum thickness in inches, and the airflow permeability in ft^3/min/ft^2. (61.24(b))

RULE 3

(50.7) EMISSION STANDARD FOR BERYLLIUM

DEFINITIONS (61.31)

"Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.

"Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.

"Beryllium-containing waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this rule.

"Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

"Ceramic plant" means a manufacturing plant producing ceramic items.

"Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.

"Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.

"Incinerator" for the purpose of this Rule only, means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.

"Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.

"Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

"Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

EMISSION STANDARD

A. No person shall discharge or cause the discharge to the atmosphere of more than 10 grams of beryllium over a 24-hour period from the following stationary sources. (61.32(a)):

1. Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium cxide, beryllium alloys, or beryllium-containing waste. (61.30(a))

2. Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight. (61.30(b))

B. Rather than meet the requirement of paragraph A of this rule an owner or operator may request approval from the control officer to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 $\mu g/m^3$, averaged over a 30-day period.

1. Approval of such requests may be granted by the control officer provided that:

   (a) At least 3 years of data is available which in the judgement of the control officer demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 ug/m^3, averaged over a 30-day period. Such 3-year period shall be the 3 years ending 30 days before the effective date of this standard as promulgated in 40 CFR 61. (April 6, 1973)

   (b) The owner or operator requests such approval in writing within 30 days after the effective date of this rule.

   (c) The owner or operator submits a report to the control officer within 45 days after the effective date of this rule which report includes the following information:

      (1) Description of sampling method including the method and frequency of calibration.

      (2) Method of sample analysis.

      (3) Averaging technique for determining 30-day average concentrations.

      (4) Number, identity, and location (address, coordinates, or distance and heading from plant) of sampling sites.

      (5) Ground elevations and height above ground of sampling inlets.

      (6) Plant and sampling area plots showing emission points

(7) Information necessary for estimating dispersion including stack height, inside diameter, exit gas temperature, exit velocity or flow rate, and beryllium concentration.

(8) A description of data and procedures (methods or models) used to design the air sampling network (i.e. number and location of sampling sites).

(d) Air sampling data indicating beryllium concentrations in the vicinity of the stationary source for the 3-year period specified in subparagraph 1.a) of this paragraph. This data shall be presented chronologically and include the beryllium concentration and location of each individual sample taken by the network and the corresponding 30-day average beryllium concentrations.

2. Within 60 days after receiving such report, the control officer will notify the owner or operator in writing whether approval is granted or denied. Prior to denying approval to comply with the provisions of paragraph B of this rule, the control officer will consult with representatives of the stationary source for which the demonstration report was submitted. (61.32(b))

C. The burning of beryllium and/or beryllium-containing waste, except propellants, is prohibited except in incinerators, emissions from which must comply with this rule. (61.32(c))

If any other rule or regulation of this District is more restrictive, that rule shall apply.

MONITORING

1. Stationary sources subject to paragraph B shall locate air sampling sites in accordance with a plan approved by the control officer. Such sites shall be located in such a manner as is calculated to detect maximum concentrations of beryllium in the ambient air. (61.34(a))

2. All monitoring sites shall be operated continuously except for a reasonable time allowance for instrument maintenance and calibration, for changing filters, or for replacement of equipment needing major repair. (61.34(b))

3. Filters shall be analyzed and concentrations calculated within 30 days after filters are collected. Records of concentrations at all sampling sites and other data needed to determine such

concentrations shall be retained at the source and made available, for inspection by the control officer for a minimum of 2 years. (61.34(c))

4. Concentrations measured at all sampling sites shall be reported to the control officer every 30 days by a registered letter. (61.34(d))

5. The control officer may at any time require changes in, or expansion of the sampling network. (61.34(e))

TESTING PROCEDURE

1. Unless a waiver of emission testing is obtained under Rule 1 or has been previously granted under 40 CFR 61.13. each owner or operator required to comply with paragraph A shall test emissions from his source:

   (a) Within 90 days of the effective date of this Rule.

   (b) Within 90 days of startup in the case of a new source.

2. The control officer shall be notified at least 30 days prior to an emission test so that he may at his option observe the test. (61.33(b)) At his option, the control officer may conduct the required test.

3. Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in any 24-hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities, or other factors, the calculation of maximum 24-hour period emissions will be based on that combination of factors which is likely to occur during the subject period and which result in the maximum emissions. No changes in the operation shall be made which would potentially increase emissions above that determined by the most recent source test, until a new emission level has been estimated by calculation and the results reported to the control officer. (61.33(c))

4. All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the control officer by a registered letter dispatched before the close of the next business day following such determination. (61.33(d))

5. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the control officer, for a minimum of 2 years. (61.33(e))

RULE 4

(51.21) EMISSION STANDARD FOR BERYLLIUM ROCKET MOTOR FIRING

DEFINITIONS (60.41)

"Beryllium propellant" means any propellant incorporating beryllium.

"Pocket motor test site" means any building, structure, facility, or installation where the static test firing of a beryllium rocket motor and/or the disposal of beryllium propellant is conducted.

EMISSION STANDARD

A. No person may discharge or cause the discharge of emissions to the atmosphere:

   1. From rocket-motor tests sites which cause time weighted atmospheric concentrations of beryllium to exceed 75 microgram minutes per cubic meter of air within the limits of 10 to 60 minutes, accumulated during any 2 consecutive weeks, in any area in which an effect adverse to public health could occur. (61.42(a))

   2. If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed 2 grams per hour and a maximum of 10 grams per day. (61.42(b))

If any other rule or regulation of this District is more restrictive that rule shall apply.

MONITORING

1. Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such a manner that the effect of these emissions can be compared with the standard. Such sampling techniques shall be approved by the control officer. (61.43(a))

2. All samples shall be analyzed and results shall be calculated within 30 days after samples are taken and before any subsequent

rocket motor firing or propellant disposal at the given site. All results shall be reported to the control officer by a registered letter dispatched before the close of the next business day following determination of such results. (61.43(b))

3. Records of air sampling test results and other data needed to determine integrated intermittent concentrations shall be retained at the source and made available, for inspection by the control officer, for a minimum of 2 years. (61.43(c))

4. The control officer shall be notified at least 30 days prior to an air sampling test, so that he may at his option observe the test. (61.43(d)) At his option, the control officer may conduct the required test.

TESTING PROCEDURE

1. Source subject to paragraph A 2 of this rule shall be continuously sampled, during release of combustion products from the tank, in such a manner that compliance with the standards can be determined. The provisions of Rule 1 shall apply. (61.44(a))

2. All samples shall be analyzed, and beryllium emissions shall be determined within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All determinations shall be reported to the control officer by a registered letter dispatched before the close of the next business day following such determinations. (61.44(b))

3. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the control officer, for a minimum of 2 years. (61.44(c))

4. The control officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test. (61.44(d)) At his option, the control officer may conduct the required test.

"Mercury chlor-alkali electrolyzer" means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.

"Mercury ore" means a mineral mined specifically for its mercury content.

"Mercury ore processing facility" means a facility processing mercury ore to obtain mercury.

EMISSION STANDARD

A. Emissions to the atmosphere from those stationary sources which process mercury ore to recover mercury and those which use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide (60.50) shall not exceed 2,300 grams of mercury per 24-hour period. (61.52)

If any other rule or regulation of this District is more restrictive, that rule shall apply.

TESTING PROCEDURE

1. Mercury ore processing facility.

   (a) Unless a waiver of emission testing is obtained under Rule 1 or has been previously granted under 40 CFR 61.13, each owner or operator processing mercury ore shall test emissions from his source:

      (1) Within 90 days of the effective date of this rule.

      (2) Within 90 days of startup in the case of a new source.

   (b) The control officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test. (61.53(a)(2)) At his option, the control officer may conduct the required test.

   (c) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the control officer. (61.53(a)(3))

   (d) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. Each determination will be reported to the control officer by a registered letter dispatched before the close of the next business day following such determination. (61.53(a)(4)

   (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the control officer for a minimum of 2 years. (61.53(a)(5))

2. Mercury chlor-alkali plant - hydrogen and end-box ventilation gas streams.

   (a) Unless a waiver of emission testing is obtained under Rule 1, each owner or operator employing mercury chlor-alkali cell(s) shall test emissions from his source:

      (1) Within 90 days of the effective date of this Rule.

      (2) Within 90 days of startup in the case of a new source.

   (b) The control officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test. (61.53(b)(2)) At his option, the control officer may conduct the required test.

   (c) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission has been estimated by calculation and the results reported to the control officer. (61.53(b)(3))

   (d) All samples shall be analyzed and mercury emissions shall be determined within 30 days after the source test. All the determinations will be reported to the control officer by a registered letter dispatched before the close of the next business day following such determination. (61.53(b)(4))

   (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the control officer, for a minimum of 2 years. (61.53(b)(5))

3. Mercury chlor-alkali plants - cell room ventilation system.

   (a) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with subparagraph 3b of this paragraph or demonstrate compliance with subparagraph 3d of this paragraph and assume ventilation emissions of 1,300 grams/day of mercury. (61.53(c)(1))

   (b) Unless a waiver of emission testing is obtained under Rule 14 B, each owner or operator shall pass all cell room air in forced gas streams through stacks suitable for testing:

      (1) Within 90 days of the effective date of this Rule.

(2) Within 90 days of startup in the case of a new source.

(c) The control officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test. (61.53(c)(3)) At his option, the control officer may conduct the required test.

(d) An owner or operator may carry out approved design, maintenance, and housekeeping practices. A list of approved design, maintenance and housekeeping practices may be obtained from the control officer. (61.53(c)(4))

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